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MEDICO-LEGAL DIFFICULTIES FOLLOWING BONE AND JOINT INJURIES: THE LEGAL ASPECT.

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IT is with much diffidence and considerable trepidation that I approach the subject—"The Medico-Legal Difficulties following Bone and Joint Injuries"—on which I have been asked to speak tonight. It is one which to my mind presents peculiar difficulties, and if the medical opinions expressed differ fundamentally from those held by any one of you, I must crave leniency in your judgement.

The *Workers' Compensation Act* of 1926 and its amendments have had a far-reaching effect both as to the responsibility of employers and the relation of the medical profession to a large proportion of the working community which, before the passing of the above Act, obtained its medical treatment and advice at our public hospitals, in many cases free of charge. In a number of cases, as you are aware, workers paid a nominal weekly sum to ensure the right to hospital treatment without additional cost should that necessity occur. Many of such workers looked on this payment as a form of medical self-insurance. The 1926–1929 *Workers' Compensation Act*, however, gave the injured worker, in addition to monetary compensation from his employer in accordance with the Act, a right to a limited cost of medical, surgical and hospital treatment together with ambulance service. "Medical treatment" includes:

(a) treatment by a legally qualified medical practitioner, a registered dentist, or a masseur; and

(b) the provision of skiagrams, crutches, and artificial members; and

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 28, 1931.

(*c*) any nursing, medicines, medical or surgical supplies or curative apparatus supplied or provided for him otherwise than as a patient at a hospital.

Section 10 (4) (*b*) provides that:

the maximum sum for which an employer shall be liable for medical treatment afforded to a worker in respect of the same injury (whether such treatment is afforded at different stages of the injury or not) shall be twenty-five pounds.

Any additional cost of medical treatment is not chargeable against the employer and must be borne by the worker.

In addition to the cost of medical treatment an employer is also liable to pay up to £25 for hospital treatment of an injured worker. The charges for such treatment must not exceed £3 3s. per week for in-patients; and for out-patients, three shillings per treatment with a maximum of £1 1s. per week.

Although sub-section (3) (*d*) gives hospitals the right to collect the cost of treatment of injured workers from the employer (when he is liable to pay compensation), no such right has been conferred by the Statute on a medical practitioner. His right to collect his fees from the injured worker's employer is dependent upon any agreement he enters into with the employer (or his agent, the insurer) and not on the provisions of the Act. Any proceedings instituted under the *Workers' Compensation Act* for the recovery of medical expenses from an employer must be by the injured worker, to whom the medical practitioner must, in ordinary circumstances, look for payment. Further, as is pointed out above, the maximum amount which an injured worker can obtain from his employer in terms of the Statute is £25 for medical treatment.

On the medico-legal aspect of collection of fees from an injured worker for treatment of bone and joint injuries, it is of interest to note that, although the table contained in Section 16 prescribes a lump sum ranging from £75 to £675 for loss of, or permanent loss of the efficient use of, members of the body which may or may not result from bone or joint injuries, Section 55 of the Act provides that:

a weekly payment, or a sum paid by way of redemption thereof, or a lump sum payable under this Act, shall not be capable of being assigned, charged, or attached, and shall not pass to any other person by operation of law, nor shall any claim be set off against the same.

Although many of you have studied the Statute in question in so far as its provisions affect our profession and yourselves personally, some of the official duties I have had to perform make me think that some medical men have not familiarized themselves with the medical provisions of the Act, and, further, some of those who have studied it appear to have construed its provisions as they would like them interpreted.

I hope the position has been made clear by the very able article published in THE MEDICAL JOURNAL OF AUSTRALIA of February 14, 1931.

While on the question of medical fees I should like to point out to those practitioners who become annoyed—momentarily only I hope—when their accounts are submitted to me for purposes of conciliation and I do not support the fees charged, that it is the Statute itself which provides in Section 10 (4) (*a*) that:

the sum for which an employer shall be liable in respect of the medical treatment of a worker shall be such sum as is reasonably appropriate to the treatment afforded, having regard to the reasonable necessity for such treatment and the customary charge made in the community for such treatment to persons other than workers.

Many practitioners when treating workers' compensation injuries come into contact with licensed insurers. The *Workers' Compensation Act* primarily imposes liability on the worker's employer, who either insures that risk with a licensed insurer, or, with the consent of the Commission, undertakes self-insurance. In practice, when a worker receives injury the licensed insurer acts as agent for the employer, but should the insurer default in making payments, such default does not free the employer from his liability to pay compensation and the prescribed cost of treatment.

In a number of cases workers receive injury arising out of and in the course of their employment under circumstances creating a legal liability in some person other than the employer to pay damages in respect thereof at common law. Take the case of a lorry driver who sustains a broken leg as a result of negligence on the part of the driver of some other vehicle. The lorry driver may take proceedings against the driver of the other vehicle for damages at common law, in the same manner as any other citizen, but if he obtains a verdict in his favour, he cannot then claim compensation from his employer. On the other hand, if he fails at common law, he still has his right to claim compensation from his employer, but Section 64 of the *Workers' Compensation Act* says he "shall not be entitled to recover both damages and compensation." Should the lorry driver not institute proceedings for damages at common law against the driver of the other vehicle, but claim and recover compensation from his employer instead, the employer then, under Section 64, has the right to be indemnified by the person liable to pay damages. Several applications for indemnity have been determined by the Commission.

By accepting workers' compensation a worker does not forfeit his right to claim damages at common law from a medical practitioner, hospital, and others, for unskilful treatment and/or negligence. If a worker's incapacity is due to this cause, and is not a continuance of the injury he received which arose out of and in the course of his employment, it is open to the employer to refuse to pay compensation to the worker on the ground that his incapacity is due to a *novus actus interveniens*, and in all probability the worker would immediately institute proceedings for damages at common law against the medical practitioner, hospital, or others, whose negligence was the *novus actus interveniens*.

My remarks are merely to explain as simply as I can that while the injured worker has certain rights under the *Workers' Compensation Act*, he has also rights at common law. We all unfortunately know of cases in which medical practitioners have been proceeded against at common law. The claimant may be well or ill-advised as to which course he will pursue, but naturally will choose that which promises the greatest pecuniary benefit to himself. Under the present *Workers' Compensation Act* the right

to claim compensation under the Act lapses in six months from the happening of the injury, or, in the case of death, within six months from the time of death. The failure to make a claim within the period above specified is not a bar to the maintenance of such proceedings if it is found that the failure was occasioned by mistake, absence from the State, or other reasonable cause.

The determination of the question of whether a worker is entitled to, and his employer shall pay, sums ranging to £1,000 as compensation for some disabling condition which incapacitates a worker from carrying out his work, depends in many cases upon opinions expressed and observations made by medical practitioners.

It will thus be evident that members of the medical profession treating what we may generically term "workers' compensation injuries" have very grave duties to their patients, the employer, the community at large and to themselves. The practitioner's opinion is often the torch which starts a train of protracted and costly ligitation, and should be given on solid grounds. A careful examination, notes made at the time, and guarded expressions in speech or writing may avoid legal pitfalls that have a habit of cropping up months or years later. So many medical witnesses easily become medical advocates, that this phase should be carefully avoided, and one's opinions should be impartial and given from the purely medical or surgical aspect with a view to assisting the Court to arrive at a just decision rather than to assisting a particular party. By this means the dignity and honour of our profession are upheld.

You will no doubt think I am wandering from the title of this paper—"Medico-Legal Difficulties following Bone and Joint Injuries"—but these cannot be considered without a *résumé* of the application of the law as it stands. The first difficulty is to know whether you are treating an injury entitling the patient to workers' compensation or not. This may prove a simple matter, the employer, or his agent the insurer, accepting liability, and the subsequent course be "uneventful." On the contrary, there may be legal, technical, or other difficulties ahead and the ultimate decision may be referred to the Workers' Compensation Commission, and it is only then that the medical practitioner can be certain that he has been treating a "compensatable injury." Hence it is as well to take a careful clinical history in all cases. Before the Court, counsel have an almost uncanny faculty for probing into the weak points of one's "clinical history," as had the examiners in our undergraduate days.

By the introduction of an Information and Conciliation Bureau at the Offices of the Commission at 52 Bridge Street, Sydney, workers and employers are furnished with advice as to their rights and liabilities under the Act, and the conciliatory services of the Bureau are open to them. No charge is made. In practice the services of the Bureau are freely availed of by workers, employers, members of trade and industrial unions, insurers, and such services are equally available to members of the medical and legal professions.

Much litigation has also been avoided and many difficult medical questions determined by the work performed by medical referees and medical boards appointed under the provisions of the *Workers' Compensation Act*, 1926–1929.

Upon application by an injured worker, or his employer, references are made by the Workers' Compensation Commission to a medical referee or medical board to certify as to the condition of the worker and his fitness for employment. The certificate of a medical board on these points is conclusive evidence in legal proceedings before the Commission.

Where no agreement can be come to between an employer and worker as to whether and to what extent the incapacity of the worker is due to injury arising out of and in the course of his employment, a joint application may be made by the employer and worker for a certificate of a medical board on these matters. This certificate is conclusive evidence on those matters in any subsequent legal proceedings before the Commission.

When a worker has given notice of an injury he must, if so required by his employer, submit himself to examination by a legally qualified medical practitioner, provided and paid by the employer. If he refuses to submit himself to such examination, or in any way obstructs the same, his right to compensation and to take or prosecute any proceedings under the *Workers' Compensation Act* relating to compensation are suspended by the Statute until such examination takes place.

If a worker refuses to submit himself to examination by a medical referee or medical board, or in any way obstructs the same, his rights are similarly suspended.

The Medical Aspect.

We shall now deal with the medical aspect of the question, and presume that we have a potential or actual "compensation patient" suffering from bone or joint disability under our care. Our first aim is to restore as speedily as possible to the active ranks of industry the worker who has been incapacitated, fully recovered, if possible, and if that is impossible with as little "permanent loss of efficient use" as can be obtained. This calls for sound judgement, and in the younger members of our profession early recognition of the necessity for seeking expert advice.

Hands and Fingers.

In my opinion perhaps the most difficult of all bone and joint injuries are those affecting the hands and fingers. One sees many mutilated or septic hands and knows that the active condition must have caused the treating surgeon much anxiety over a prolonged period. On the accepted general axiom to save as much as possible of every digit a whole finger may have been saved, but it may then be so ankylosed or flexed as to prevent the worker following his usual occupation. For example, a slaughterman cannot "punch off" pelts with a partially extended finger. Nor can an upholsterer tuck in material with a similar but flexed finger. The failure to recognize and suture promptly a severed tendon may

alter the whole course of a worker's industrial life. I have in mind the case of a rigger who told me that he had worked on most of the high buildings in Sydney. The extensor tendons of his left middle finger had been severed, with the result that his grip with that hand (his holding on hand) was so uncertain that he was afraid to work at any height. One could enumerate numerous examples of similar disabilities in which the worker is unable to perform some perhaps simple technical movement in his trade. The assessment of lump sum compensation payable in respect of such injuries has been more or less standardized by the table in Section 16 of the *Workers' Compensation Act*. There still appears to be a tendency to keep on corrective appliances too long with subsequent permanent restriction of movement. In the course of years one sees excellent results in many severe finger and hand injuries in which active movements were indulged in early, often from force of circumstances, and I am strongly of opinion that in many cases an ounce of active movement is worth a pound of massage, hot air, *et cetera*. While I do not condemn the use of such, it should not be overlooked that in a worker of phlegmatic temperament the, say, daily journey to hospital, meeting of acquaintances made there, and the friendly attention of masseuse or other attendant provide a pleasant morning topped off by a weekly cheque as compensation from his employer's insurer. The converse of this, however, must also be avoided. I have seen workers who have been declared fit, needless to say in the absence of an X ray examination, and when a skiagram was taken later on it revealed extensive bony injury or a malunited fracture. With encouragement it is wonderful how a worker can adapt himself to the loss of or deformity of fingers.

Elbow and Shoulder Injuries.

Probably the next most incapacitating injuries are those of the elbow and shoulder. Operative procedure in such cases, and, indeed in every case, should be undertaken only after mature consideration, and, in all cases where possible, and where time permits, the employer or his insurer should be advised of the proposed operation. The employer may desire the opinion of his own medical adviser, which should be facilitated. The employer will probably have to pay the operation fee, and if it is performed with the approval of his medical officer and the fee is agreed upon, there can be no valid reason later for questioning the necessity for operation and payment therefor. It will be recognized I think that the person or company who has to pay for the operation and is responsible for carrying on the compensation payments (or in the event of death a claim for such) should become a party to any proposed operative procedure, as, should the result of the operation lead to increased disability, the employer usually has to accept the consequences of such operative procedure. Negligence on the part of the operating surgeon would, of course, make him liable for damages to the worker and would relieve the employer of this liability. Cases have occurred in which the necessity for proposed operations has been referred to the Commission for determination.

A worker has now ample sources of advice on medical and legal matters, and there appears to be a growing tendency to institute proceedings against medical practitioners if there is any suggestion of negligent or unskilful treatment. Medical evidence on such alleged negligence or want of skill is a *sine qua non*, and most medical practitioners are loath to appear in the witness box and condemn another practitioner's work. Cases do occur, however, in which the neglect or want of skill is so definite that the giving of such evidence, though distasteful, becomes a public duty. I, personally, have seen excellent results from what I may describe as "operations to restore efficiency," but I have also seen unfortunate results even at the hands of experienced surgeons. We are all naturally proud of our successes, but which of us would like to see one of our failures—and the best have them—paraded before a critical lay public? From my experience of many hundreds of injuries I would advise "hasten slowly." I remember some years ago a controversy on the "lust for operations," and this danger is still with us. Such an implication could not lie if cooperation with "the other side" were welcomed. One such case made a strong impression on my mind, and is illustrative of what I mean.

A worker being examined by a medical board for an injured back, appeared to be terribly depressed, more so than the clinical examination justified. Sympathetic questioning elicited the statement from him that he was to go into a private hospital the following week "to have a bone taken out of his leg and put in his back." He had a wife and several children dependent on him and had only a few instalments to pay off on his home. Here was a situation requiring some tact! He was reassured, advised to resume work, and report at once if unable to carry on. That was years ago and he has not returned.

While referring to medical evidence, I cannot emphasize too strongly the need for extreme care in the acceptance of statements regarding the occurrence of an accident. To illustrate what I mean:

A worker with an injury to the knee, stated to have occurred whilst the worker was raising his leg to step into an electric train, consulted his doctor. Whilst unusual, the doctor, no doubt, considered it could possibly be the result of sudden muscular effort, and later gave evidence to this effect. One can imagine his feelings when he learned later on in the case that his patient had omitted to mention that the electric train was travelling at about twenty miles per hour.

Such disingenuousness is not confined to workers.

An employer was billed by a doctor under "Schedule 'D'" for treatment of a worker's fractured femur. Investigation showed that a flake had been fractured off one condyle of the femur.

Both the above furnish examples of medico-legal difficulties which should not occur.

Head Injuries.

Of head injuries I do not propose to say much. From the medico-legal aspect a reliable history of the accident and clinical notes of subsequent hospital treatment, if any, are essential. These may furnish evidence of a severe injury at the time of accident when clinical examination later fails to give such information. Genuine cases are usually recognizable as such. It is essential to let the patient give his symptoms in his own words unassisted by relatives or friends. The "scalp wound type" invariably

"feels" for the answers expected and grossly exaggerates headache, insomnia, giddiness or other symptoms usually associated with head injuries. From the medico-legal aspect genuine head injuries open up a field of possibilities best dealt with by specialists in mental and neurological matters.

One very severe head injury was followed by most convincing signs and symptoms and expert evidence given that the worker would never be fit to work again. After some years away from work, and within a few months of obtaining a substantial verdict from the Court, the worker applied for his old position as a rigger.

In a case recently before the Commission a worker, a horse driver, sustained an injury to his frontal region with some loss of bone. He had been declared unfit at two medical examinations, but evidence was brought that between the examinations he had worked continuously for about eighteen months on very heavy work handling pig, bar and sheet iron and heavy machinery. His employer gave evidence that he was one of the best of workers and had made no complaint during that time and had been put off only because the firm had dispensed with horse drivers and was using motor vehicles. In this case the facies of the worker was not in keeping with his harrowing evidence of severe headaches, vertigo and insomnia.

I am not in the two cases quoted defending the action of the men in returning to heavy work. What I want to emphasize is that such facts before a Court decidedly discount expert medical evidence that the worker is incapable of work of that nature since his injury.

Cervical Vertebræ.

Injuries to the cervical vertebræ often become of interest medico-legally, especially in older subjects. Incipient or already present osteoarthritic changes may be lighted up, and the necessary immobilization of the head and neck only too frequently is the first step in making a chronic invalid. The worker may read the account of his accident in the newspapers, describing Mr. Blank lying in bed in hospital, philosophically smoking a cigarette, with a broken neck. On more than one occasion such a newspaper cutting has been produced to a medical board, and this early impression of a serious and permanently incapacitating injury is very difficult to remove.

One such patient was escorted into my room, after nine months' careful nursing by a devoted wife. He had been warned by his doctor that any sudden movement might be his last, and had faithfully followed all instructions. A skiagram showed no sign of fracture, and neither did the original skiagram taken shortly after the accident. The shadow of the overlying arch of the atlas had been thrown across the odontoid process and interpreted as a fracture of the latter.

Back Injuries.

Back injuries are extremely common, and evidence has been given in Court that no one can with certainty diagnose an injured back. Gross bone lesions are, of course, easily recognized, but apart from these it is never safe to express an opinion in the absence of an X ray examination. The skiagram must be of good quality, and unless interpreted by an expert may be very misleading. Provided there is no bone injury, a careful examination will demonstrate what muscles or groups of muscles are affected. Perhaps no other person so easily develops a "compensation complex" as the worker with an injured back, or so frequently becomes the subject of a medico-legal action. While celluloid jackets, supporting belts *et cetera* have their legitimate uses, they, in my opinion, too frequently confer the seal of incapacity.

In the confirmed back injury of the minor type it is surprising how often there is a psychological factor present. The refusal of the employer to allow a desired change of work, a fancied injustice of any kind, the possibility of the work cutting out, and similar subtle underlying factors cannot be detected by an X ray or any clinical examination, and no orthopædic treatment will avail.

There is no doubt that osteoarthritic changes already present may be aggravated by a minor injury to the spine, but the worker should be encouraged to move as soon as possible and to keep moving. I have been surprised at times at the degree of *spondylitis deformans* present and the workers carrying on.

With the classical "railway spine" you are all familiar, also with the therapeutic effect on its medico-legal aspect when a favourable verdict results and monetary consideration is awarded.

As Jones and Lovett point out in "Orthopædic Surgery," one of the principal difficulties is to separate the organic from the functional element in traumatic backache.

> If the symptoms are contradictory and confusing and the picture is not a consistent one, the chances are very strong that there is a definite neurasthenic element.

This may follow either bone lesions or sprains, and while the title of this paper should, strictly speaking, exclude consideration of the latter, it is comforting to find Jones and Lovett in agreement with me in that (i) as soon as possible, movement must be encouraged and bed forbidden; (ii) optimism, explanation, and re-education are the essential factors.

I would place "optimism" in capital letters.

With regard to adhesions I again quote from Jones and Lovett:

> These adhesions could be prevented if, after the abeyance of active symptoms in trauma of the back, graduated exercises and movements were practised.

As a disciple of these principles, I on one occasion advised a patient with an "injured back" to perform certain exercises, and, as he improved, to do some work first in his house and follow this up with work outside. I did not see him for some weeks. The success of this advice and its medico-legal aspect were exemplified later in Court when evidence was given that the owner of the "chronic back" had put up a substantial dividing fence (posts, rails and palings) between the allotment on which he resided and the adjoining one which he owned. He stoutly defended his action as only "following the doctor's orders." Of course, had he attended for examination instead of sending his wife to collect his money, the condition of the palms of his hands would have, as the boys say, "given the show away" then.

In quite a different category are tuberculous lesions of the spine and *spondylitis traumatica tarda* (Kümmel's disease). Shortly after the publication of some articles on Kümmel's disease in the medical journals we had a small run of back injuries diagnosed as Kümmel's disease. A case heard before the Commission is of particular interest and illustrates a number of the points to which I have previously alluded.

Much medical evidence was given to show that after receiving a crushing injury in a lift some three years previously, the worker had developed angulation of the spine, which was diagnosed as Kümmel's disease. Both surgeons and radiologists on one side stated definitely that the condition was not tuberculous, giving their reasons, and were satisfied it was Kümmel's

disease, also giving their reasons for this opinion. One surgeon explained the mechanism of the injury on the history given him. Medical experts on the other side were equally certain the condition was tuberculous. In the meantime the subject of this controversy died, and necropsy proved beyond any doubt that the condition was due to old-standing tuberculous necrosis.

So far the medical evidence. On questions of fact (which many medical men seem unable to dissociate from medical opinion) the evidence showed that the worker had suffered with his back for many years and that he could not have been crushed by the lift, an automatic stop having come into operation after it had ascended about twelve inches. Further, that the lift floor and iron bar against which the worker was stated to have been crushed, were 40 centimetres (sixteen inches) apart. As one lay witness aptly said, "We could not have pulled him out had he been stuck," and he had been pulled out without lowering the lift.

The following came under my notice quite recently:

A worker, aged thirty-seven, had been labouring on dairy farms for twenty years, and two years previously came to the city and obtained employment as a factory hand. Part of his duties was to assist a fellow worker in lifting weights of about 45 kilograms (one hundred pounds) and put them down at a lower level, necessitating a half turn. When just about to lower the weight in this way his back seemed to "give" and he felt a burning pain. The pain passed off and he was able to carry on. About a month later he was performing a similar operation and as he turned had a similar but much worse pain. A few days later when getting out of bed his back "went" again and he had not been able to work since. He received treatment for a sprained back for some time and was examined by X rays. Some six months later he was again submitted to X ray examination, and this disclosed extensive erosion of the fifth lumbar vertebra with compression.

In this patient the fifth lumbar vertebra was undoubtedly diseased, and this view was strengthened by the presence of abnormal patches in the iliac bones.

Fractured transverse processes in the lumbar region are not uncommon and may result from muscular action alone, especially if there is a twisting motion at the time; for example, a bag of coal being carried on the back or coming down suddenly and the worker losing his balance. They may also be caused by direct violence. Medico-legally they are apt to be so diagnosed and the fracture missed. It is not safe to state in evidence that a worker is fit when he complains of persistent pain at either side of the mid-lumbar region unless a good skiagram is available. Such fractures do well and the worker is usually able to resume his former employment. We have had several instances in which the fact that one or more transverse processes had been fractured was discovered only after the patient had resumed work and was submitted to X rays for a subsequent injury. Bony union does not always follow, but even so the functional result is excellent. Very often, however, when the patient sees the skiagram or is told that there is no bony union, the psychological effect is bad. Evidence has been given by medical witnesses that the fibrous tissue between the fractured ends acts as a "foreign body" and occurring where of necessity some movement is inevitable keeps up a condition of chronic irritation. I will leave you to judge the soundness of such an opinion.

The fifth lumbar vertebra, from its anatomical peculiarities and the difficulty in photographing it by X rays, has become a fruitful medico-legal region. Jones and Lovett state:

The transverse processes may be long and slender or short and squat. They may be in contact with the ala of the sacrum or wing of the ilium, with a pseudoarthrosis at the point of contact. Actual fusion of one or both processes to the upper part of the sacrum, the so-called sacralization, is by no means uncommon.

In 75% of individuals the processes are asymmetrical, so that the "enlarged" process which impinges on the ilium or sacrum is usually a unilateral anomaly.

In addition there may be a lack of fusion in the middle line of the neural arch, or a hiatus between the neural arch and the body. Can one imagine a more fruitful field medico-legally, especially with an indifferent skiagram? A good skiagram, preferably stereoscopic, is essential.

In my experience true traumatic sacro-iliac strain is not common. From its anatomical structure the articulation between the sacrum and ilium is a very strong one. In a manual worker it would be reasonable to assume of extra strength. It has been asserted that subluxation of this joint can be demonstrated in skiagrams by an alteration in alignment at the *symphysis pubis*. Jones and Lovett, in "Orthopædic Surgery," write:

This is a most debatable subject, and at the present time the consensus of opinion is that sacro-iliac relaxation is a rare phenomenon.

If it does occur one can imagine it to be a very disabling condition in a manual worker. From the medico-legal aspect, should a sacro-iliac joint which has been diagnosed both as and not as a subluxated joint be operated on with a view to fixation? Some surgeons claim to have had excellent results from this operation. From the few instances of which I have personal knowledge I am unable to recommend operative treatment. If such an operation be contemplated it should be carried out only with the full acquiescence of the employer (or his insurer) who has to carry the worker should the operation prove a failure.

The Pelvis.

Fractures of the pelvis are usually the result of severe trauma. Uncomplicated fractures usually do well and have not presented any serious medico-legal difficulties, provided the subject is anxious to get well. The same cannot be said, unfortunately, of complicated pelvis fractures, the permanently disabling features in many of which are beyond controversy.

The Hip Joint.

Hip joint injuries do not suggest any special medico-legal difficulties beyond the assessment of the percentage of incapacity and expression of opinion as to the class of work the worker is capable of. The latter has more in it than meets the eye, and the usual formula "watchman, gate-keeper, lift driver, caretaker *et cetera*" is not of much assistance as a rule to the tribunal. One finds men in various occupations with quite serious disablement from hip disease or injury who have found a niche in life where they can earn a livelihood. For a worker so affected by trauma, perhaps illiterate, or who

has spent the greater part of his life at a trade, the problem of what work he can or cannot do is much more difficult. This difficulty is increased when it is remembered how few of our profession have an actual working knowledge of the occupation to which they are assigning the worker. Before giving such evidence it is wise to make actual trial of the work proposed, or to decline to express an opinion.

On one occasion I had to decide whether a worker could wheel trucks along a wooden floor, work which was described as "light." Personally, I found that to start the loaded truck required an extensive and well coordinated general muscular effort. When once the initial inertia had been overcome, the work was easy, but the presence of numerous obstacles and occasional sudden turns made the arresting of the acquired momentum nearly as strenuous as the initial effort. I had no hesitation after trying it, in deciding that the work offered was unsuitable.

On another occasion an indignant medical man called to see me because a medical board had certified a bricklayer as "unfit to follow his occupation as a bricklayer" after my visitor had certified he was "fit." The worker in question had sustained an injury to his left wrist which prevented his manipulating any weight with his left hand. He brought an ordinary brick to the medical board, and gave a demonstration of the manner in which it had to be handled at his work, stating that the average brick weighed about ten pounds. He explained that the bricks were delivered to him in a confused heap, and after lifting one to lay it he had to juggle it into the correct position, in some cases turning it right over, and that this had to be done rapidly. The critic admitted that he did not know the weight of a brick when handed the one left by the worker. As to handling it, that was "easy," and he proceeded to do so using both hands. He was rem'nded that the bricklayer's actions were limited to the left hand only, the right being occupied with the trowel. With a remark that there was nothing in that, and with his left hand giving a demonstration swing, the brick slipped from his grasp and fell on the foot of a member of the board, who had been an interested spectator. After cooling down, the referee was emphatic that the medical board's opinion was the correct one.

The Knee Joint.

The medico-legal aspect of injuries to the knee joint is of interest, especially those in which damage has been done to a meniscus. This may result, as you know, in a comparatively simple manner, and the correct diagnosis may be difficult. Cases occur in which physical signs are vague, and yet the patient asserts his inability to work because of severe pain. I have been struck by the number of such, who, after having been seen by a varying number of medical practitioners and then coming before a medical board, volunteer the information that their chief disability is that the knee "locks." It is obvious that they have been previously asked the question and have realized its importance. But the real test is to ask the patient what actually happens. I have been interested in the variety of descriptions given and the accompanying symptoms. The occurrence of and symptoms following a true locking are so typical and easily described as to be well within the mental calibre of any workman. As before referred to, confirmation of the diagnosis and the sanction of the party responsible for the operation fee should, if possible, be obtained before operation. It appears to me that it is not unreasonable for the parties to prefer that the operation be performed by an experienced surgeon. Even then, as has been given in evidence before the Commission, no sensible surgeon would guarantee a perfect result, though, fortunately, with the cooperation of the patient, the result is usually satisfactory.

Most of the numerous disorders of the knee joint are well within the realm of the surgeon and orthopædist, and from the medico-legal aspect the same general principles apply. Two types, however, may be mentioned as raising difficult medico-legal points. The first is that in which an elderly worker with chronic arthritis in both knees injures one at his work and must be carried on the ground of aggravation of a preexisting condition. For how long should the worker be carried? The acute or subacute condition brought on by the accident may gradually subside, though in elderly subjects this may take a very long time. One view is that the diseased condition has been definitely advanced in time by the accident, and that the general effect on an elderly worker by "laying up" is detrimental to him. The employer may plead that he did not know the worker was not normal, but it has been held that the employer takes the worker as he is. In such cases there are usually other signs present to indicate that the patient was nearing the end of his usefulness as a manual worker and a liberal compromise in favour of the worker seems the fairest way to both parties: no one can definitely say when the arthritis might not have flared up from constitutional causes or apart from his employment.

The other type is the presence of such a progressive disease as Charcot's disease of the knee joint. One day, sooner or later, the inevitable happens and the knee gives way. If at home, no compensation. If at work and such work aggravates or accelerates the condition, compensatable. Here again the age, history and degree of bony changes may assist, but such cases must be viewed from every angle and absolutely without bias in coming to an opinion.

The Ankle and Foot.

I have already trespassed so much on your time that I can make only brief reference to ankle joint and foot injuries. These are so obviously disabling in the majority of cases as to need no comment from the medico-legal aspect. One point, however, would seem to be neglected, and that is reeducation so far as is possible in the proper use of the leg or foot. It is not uncommon to find the convalescent walking with a knee held perfectly rigid or with an exaggerated limp. Or the worker may use only one border of the foot on the affected side. While these gaits may be pardonable in the earlier stages of recovery, if uncorrected, they tend to become habitual and prejudice the worker's future chances of obtaining employment. I am not speaking of those cases in which a limp or gait is assumed to mislead a medical examiner. These usually succumb under a thorough examination.

Flat-foot occasionally presents a medico-legal problem and should always be looked for and excluded in any complaint of pain in the legs or feet. The disability arising from flat feet may be very real. From a study of gaits in our public places it would seem that flat feet will develop and progress (unless corrected) in some subjects quite apart from the individual's occupation, and the employer should be saddled with the result of this inherent weakness only after very mature consideration.

One other point—and this advice seems so elementary as to be superfluous—always examine the corresponding limb on the other side. Such comparisons are not odious, but often extremely helpful and may avoid the confession in the witness box that one has not done so.

For the correct diagnosis of certain bone and joint injuries the advisableness of making an X ray examination may have to be determined, and out of this may arise medico-legal difficulties. In the majority of cases the treating surgeon is in the best position to decide whether the part should be examined by X rays or not, and many general practitioners, especially in the country, now have their own plants for this purpose. The fees charged by specialists in this work are rarely questioned, as it is generally conceded that the specialist in radiography is paid not only for the excellence of the pictures he produces but also for the soundness of his report on them. The films taken by general practitioners may vary in quality almost as widely as do the fees charged for them, and it is not uncommon for a specialist to find in such films something not present that has been reported on or that something is present which has not been reported. That such variations of opinion should arise is only to be expected. The sanction of the employer (or his insurer) to take a radiograph of the patient and a statement of the cost made at the same time would obviate subsequent dispute as to payment therefor.

It happens on occasions that the radiographer is asked to go to the patient with a portable plant. The fees charged under such circumstances are naturally on a different basis than when the patient attends the radiographer. The employer or insurer later may claim that it would have been less expensive to send the patient to the radiographer's rooms by ambulance than to pay the fee subsequently demanded. Much friction of this nature would be obviated if the matter were discussed and the fee arranged for with the person responsible for payment before and not after the skiagram has been taken.

When asked to express an opinion as to whether the taking of a skiagram was necessary or not, I have invariably, with one exception, replied that the surgeon in charge of the case is the best judge. The exception was when the practitioner wrote in explanation of why two X ray examinations were called for when a finger had been cut, as follows:

> The first X ray was taken because the patient stated that he felt the instrument he used enter the bone of the finger. The X ray showed no lesion. The second X ray (two views) was taken two days later to make certain, as there are cases of fractures which do not show on an X ray film until reaction in the adjacent bone begins!

Conclusion.

Comment may be made that there are many points in "The Medico-Legal Aspect of Bone and Joint Injuries" which have not been touched on. I quite recognize this, and if my remarks have been incomplete and somewhat sketchy it is because the subject is so vast and the time at my disposal so short.

In conclusion, I draw your attention to the following figures from the official statistics. During the last four years (1926–1930) three million pounds have been paid by way of compensation under the provisions of the Act. For the same four-year period more than a quarter of a million pounds of this was paid for medical treatment, the amount for the last year being about £100,000. As the official figures deal only with about 80% of the total returns, and as a proportion of the payments made do not appear in the official returns at all, the actual amounts are considerably in excess of those quoted.

Quite apart from the material benefit which it receives, as these figures show, I think the profession has also a public duty in assisting as far as possible the just distribution of compensation to those for whom it was intended—the sick, wounded, and maimed of our great industrial army and those bereft of their breadwinners by industrial injuries and accidents.

RADIOGRAPHY AND MEDICO-LEGAL CASES.[1]

By J. G. EDWARDS, M.B., Ch.M. (Sydney),
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THE work of a radiologist brings him very frequently into the legal arena and his special knowledge is of great value in many of these cases, and makes him a most valuable witness.

The cases met with are more of accident and injury, but at times obscure chest and abdominal conditions call for special evidence.

The radiologist himself may be the object of a lawsuit if he exercises negligence in the practice of his specialty.

In law when a medical man instals an X ray machine he advertises thereby that he is competent in its use, and he becomes responsible for any mistakes he may make, although in these cases he will not be expected to display as much skill as a recognized specialist.

A diagnostic examination, even when multiple regions are examined, should cause no reaction on the skin or injury to organs. Danger is likely when X ray examinations are repeated within a short period. Patients frequently get their medical attendant to have a second examination made without informing the radiologist of the previous examination—they call this "getting an independent opinion." This is a very dangerous practice and the radiologist could not be blamed for a "burn" contracted in this way, as the patient has withheld necessary information. It is quite safe to repeat an examination if there is no skin reaction in twenty-one days.

A type of medico-legal action which has not yet appeared here, but which has been quite lucrative in America, is to sue the surgeon for negligence, when a bad result has occurred, in not having a fracture examined by X rays. In one case a medical man had to pay £2,000 in a fractured femur case, although he proved that there was no X ray apparatus within thirty miles of the patient's home.

The law courts, the patient and the jurymen all expect routine X ray examination of fractures,

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 28, 1931.

and unless such an examination has been advised or made, the medical man will find himself in disfavour with the court.

In making a report, the radiologist should enumerate variations from the normal and record his conclusions drawn from these observations and state what pathological condition is present.

Radiology is one of the most specialized of the medical specialties, calling as it does for most intricate apparatus and special knowledge of the subject.

The radiologist should be a pure consultant and should only see patients referred to him by other practitioners. Of course, he should be free to furnish reports for the medical officers of insurance companies and he should be prepared to supply information for solicitors preparing cases for presentation in the law courts.

The radiologist should report direct to the medical attendant and enclose any necessary films to illustrate his report.

The ownership of the film has never been settled in our courts, but in the American courts it has been ruled that they remain the property of the radiologist. The film is looked upon as the instrument from which the radiologist forms his opinion, and the patient is no more entitled to it than he is to the physician's stethoscope or urine testing stand. The patient pays for the expert opinion and not for a set of photographs.

Unless a man is well versed in the interpretation of skiagrams, he should refuse to pass an opinion on skiagrams produced in court. He should tell counsel that he is not skilled in interpretation and that such questions should be directed to the specialist.

In a recent case a general practitioner, who had probably never seen a hundred skiagrams, swore that he could trace the passage of a septic periostitis and osteomyelitis from the outer aspect of the greater trochanter and along the neck of the femur to the hip joint, but the film showed no change from the normal except in the hip joint itself, which was the site of a healed arthritis. On another occasion a medical man demonstrated the acromio-clavicular joint as a fracture of the clavicle.

Similarly, a radiologist should confine his evidence to the bony injury and in most instances leave soft tissue injuries to the surgeon; a radiologist should always be prepared to admit that soft tissue injury may frequently cause as much as or even more disability than an actual fracture. The witness should always be absolutely impartial. It is sad to see a medical witness leaning so often to the side which is paying his fee. When in the box, the witness should give evidence clearly and in simple language and should not use any more technical terms than necessary.

Often counsel will convey a wrong impression to the court by his method of interpreting answers and the witness is quite free to explain any point of evidence or any apparent contradiction to the judge. Judges are very keen, alert men, and they always welcome a little light being thrown on some abstruse technical point. Counsel will, often when in a corner, try the very old question: "Don't the X rays ever make a mistake?"; and the answer is, "No, but the inexpert interpreter may do so."

The quotation of authorities by counsel is often troublesome, but if you have had a good experience and know your subject, it is always possible to meet the onslaught by stating that you differ from the authority. No matter how great the authority, you can state that your personal experience has been different.

It is not necessary that a skiagram be taken by the radiologist himself. Recently counsel objected to one of our skiagrams because our technician had taken it. The judge overruled the objection and stated that the expert report was the essence of an X ray examination. Similar rulings have been made in the British courts.

The radiologist must be acquainted with the normal appearances at all ages and with all variations from the normal which are consistent with perfect function. He must be also conversant with the appearances of epiphyses at all ages.

There are some particularly difficult regions which are the happy hunting ground of litigants, notably the lumbo-sacral junction (of which more later), and if every opportunity is taken of examining skiagrams of this region in patients who have never received a back injury, and so of becoming familiar with the normal as well as the abnormal, it will save much worry and trouble when meeting with these abnormalities following accidents.

Large employers of labour for heavy lifting would probably find it pay to have the lumbo-sacral regions examined by X rays before employing men, and then eliminate all those showing conditions which are so frequently associated with "weak back" symptoms, for example, irregular transverse processes of the fifth lumbar vertebra, sacralized vertebræ and other abnormalities in this region. Such examination of the chests of applicants for work in mines and in sewers has greatly lessened claims for compensation.

Fixed routine positions should be employed in taking pictures of joints, while in fractures of long bones the fracture should be centred over the middle of the film and the central rays should pass through the limb at right angles to the film. Unless this is done, the divergent X rays will produce distortion and possibly exaggeration of the displacement. All pictures of limb fractures should be taken in two planes, and in spinal cases a lateral view is probably more important than an antero-posterior one. Stereoscopic films are essential for skulls, spines, shoulders, ribs, hips and chests and should be taken as a routine. When taking skiagrams of joints, especially in the rugged type of working man, it is very desirable to photograph the uninjured joint for comparison.

In spinal injuries, the importance of immediate X ray examination cannot be exaggerated. If this is done, it is possible at a later stage to say whether some bony abnormality has developed as a result of the injury, or whether it was present at the time of injury. After months and years it is impossible to state the date of production of some abnormal bone deposit.

Immediate X ray examination of injuries to the eyeball is also desirable. A history of an eye injury from stone or wood may not apparently call for X ray examination at the time, but frequently a loss of vision at a later date leads to such examination and a metallic foreign body is found.

It is not always possible to state the age of an injury to bone, but it is possible to state whether it is an injury of a few days or weeks or whether it is of months' or years' standing. A simple fracture of a long bone without displacement may heal completely and leave no trace in from three to six months. This is particularly true in cases of fractures of metacarpals, metatarsals and tibia. When displacement has occurred, the fracture may still show signs throughout life. Callus, which is more profuse in young subjects, has usually disappeared in nine months and the bony union is then by compact bone. Skull fracture lines can be demonstrated after a year or longer, while depression can be demonstrated throughout life.

It is not possible to tell from a film whether soft tissues lie between fragments or whether fibrous union is present. Fibrous union of transverse processes and even of the patella is compatible with perfect function.

Non-union is prone to occur when the site of a fracture involves a nutrient artery or when inefficient methods of fixation are employed. In some cases good callus may form and then after a few months a definite line of softening occurs in the callus and union may be greatly delayed; probably in these cases there is a low-grade infection present.

Once a fracture has shown displacement of fragments, it is very rarely possible to get exact anatomical position, but this is of no great moment so long as function is restored. In the treatment of fractures good alignment of the limbs with good function is to be sought after rather than the perfect anatomical position. Cabinetmaking results are not often found.

Some displacement of fragments leads to earlier and better callus formation, and it is notable that fractures without displacement frequently take a long time to unite and very little callus formation is noticeable. This occurs especially in fractures of the femur and humerus and in fractures which have been plated so that the bones have been held in perfect position.

There are many regions of the body which offer difficulty in interpretation and in which the inexpert is likely to give erroneous evidence.

Skull fractures, considering the number of head injuries met with, are really very rare injuries and should not be diagnosed too readily.

In a large hospital with routine examination of all head injuries, most of which have been admitted as "skull fractures," it is found that only about one in forty shows an actual fracture. A patient with an extensive fracture of the base rarely recovers, but one with a gross fracture of the vault more often does so.

The mistaking of diploic venous grooves and of the arterial grooves for fractures is very commonly seen, and in the posterior parietal region there is often an arrangement of grooves giving the appearance of a stellate fracture. If a skiagram is taken of the opposite side, a similar arrangement will be noted and thus a mistake in diagnosis avoided. A skull fracture line is clear cut and will cross the vessel grooves without alteration of direction.

In spine injuries, the lateral view in all regions is of greater importance than the antero-posterior view, as compression fractures cannot always be demonstrated in the latter.

Fractures of the odontoid process of the axis are frequently wrongly diagnosed, due to overlap of the shadow of the ring of the atlas in the film. A patient who can freely rotate his head cannot have such a fracture, yet in two cases recently we have seen this diagnosis with perfect function present. The natural curvature in the dorsal region is subject to increase in many strong men with humped shoulders, and the individual bodies become quite wedge-shaped. The compression fracture picks out one body, mostly the fifth, seventh, eighth and twelfth. The other bodies are rarely compressed.

In the lumbar region many confusing appearances are seen. The first lumbar vertebra commonly has jointed transverse processes recorded as fractures.

Fractured transverse processes are generally the result of sudden muscular violence and not of direct injury. One, two or the whole five may be fractured, and once there has been displacement there is rarely any chance of bony union occurring.

The variations in the last lumbar and first sacral regions are probably more frequent than the usually described normal.

The last lumbar vertebra may fuse with the first sacral body and its transverse processes with the lateral sacral mass, or it may fuse without its processes joining with the lateral mass.

The first sacral body may appear as a separate body and really become part of the lumbar spine.

Spina bifida occulta is seen about 15% of all spines and should not be diagnosed as fracture of an arch. The lipping of lumbar bodies from *spondylitis deformans* is a gradually progressive lesion, and in a person with this condition a slight injury may produce marked symptoms, but an extreme degree of spondylitis with fusion and collapse of bodies may be present without in the slightest inconveniencing the subject. Any person of middle age may suffer, and many extreme cases have been seen in medical men who have never been subject to much violence or hard labour.

Before passing from the spine, the possibility of an injury interfering with the nutrition of a body must be borne in mind. This causes a gradual atrophy of the body, and the condition is then known as Kümmel's disease and may not be demonstrable for many months after the injury. It is a very rare complication.

In the upper limb upward dislocation of the clavicle may escape detection, but it should not, if the opposite shoulder is examined for comparison.

In fractures of the upper third of the ulna the elbow should also be included, as a forward dislocation of the head of the radius is quite often an associated lesion.

Witnesses frequently report an oblique fracture of the ulnar side of the middle third of the radius when

the appearances are really due to an irregularity of the ridge to which the interosseous membrane is attached.

In the lower limb a line of growth is frequently sworn to as a line of healed fracture.

Abnormal ossicles about the ankle and foot are great sources of trouble. The *os trigonum* and the sesamoid bone in the tendon of the *tibialis posticus*, the tubercle of the scaphoid (developing as a separate ossicle), and the base of the fifth metatarsal (developing as a separate bone) are often described as being due to injury. These conditions are generally bilateral and call for examination of the opposite joint.

THE ESTIMATION OF LEAD IN THE EGG OF THE DOMESTIC HEN.[1]

By WILFRID B. S. BISHOP, M.Sc. (Sydney),
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THE method used for the estimation of lead in eggs is an adaptation of that described by Avery, Hemingway and others[1] and was described in detail in my paper of 1928.[2] The results obtained were regarded as unusually high for lead in normal tissues, and although subsequent papers[3] indicated that a large variation in the amounts of lead found in eggs was to be expected, a joint review of the method together with independent analyses by an entirely different method was made by Bishop and Cooksey[4]. The analyses using the metabisulphite reaction were made by Cooksey.

It was thought that these two collateral determinations by two entirely different methods, agreeing as closely as they did, would have cleared up any doubts as to the order of the amount of lead found in the egg.

Subsequently a criticism of all the above work was published by Taylor,[6] and while it is felt that the points of his criticism have already been dealt with by Bishop and Cooksey, there are some additional points that will be dealt with here, while additional evidence will be found in the paper which preceded this and which was published in this journal on August 1, 1931. It was the completion of this latter paper which has delayed until now this note.

The method of Avery and others was used, as explained earlier,[2] because all phases of the method, losses, gains, accuracy of estimations and the like, had been studied in detail, and therefore it seemed preferable to others, which while having some points of advantage were not known in their entirety. The author was further guided in his choice by the experiences of Tannahill[5] which were subsequently reported.

Here two points cited by Taylor may be cleared.

The Addition of Lead.

The original procedure as given in my first paper[2] was as quoted here:

In all estimations in this paper and those which follow, the lead concentration is always in the range of 0·1 milligramme to 0·2 milligramme. Thus when the lead in the unknown solution was expected to be less than 0·05 milligramme, sufficient standard solution was added to bring the lead value within the range given above, leading to an enhanced accuracy for the determination.[2]

The dangers and obvious criticisms of such a proceeding were thought to be outweighed by the increased accuracy obtainable, especially as no interference was found using known solutions. However, at the suggestion of Dr. Chapman, the procedure was abandoned, and all results after June, 1928, were obtained without the addition of lead or copper acetate. This was made clear to Dr. Taylor in a discussion of this work.

The Final Determination of Lead.

The following is quoted by Taylor from the paper under criticism:

The comparison is then made with the following solution: Five cubic centimetres of one in two ammonium acetate solution, one cubic centimetre of 10% potassium cyanide solution, one cubic centimetre of 0·880 ammonium hydroxide, two drops of 1% gum arabic solution, two drops of sodium sulphide solution, and the whole is made up to nine cubic centimetres with distilled water. The solution must be quite colourless. Sufficient of the lead acetate solution is then added from a burette until the colour developed is the same as that of the unknown solution. The amount of lead standard solution is read off from the burette which should be graduated to read 0·05 cubic centimetre. The solutions are then placed in the cups of a Duboscq colorimeter and the final comparison made.

This description is really incomplete, since no detailed account is given of the estimation at which the final figure is obtained. Reference to this estimation is, however, made in the text of the paper. Since it was stated in my paper that the method is not new, but an adaptation of Avery's method, the final estimation involves two estimations: one as given above, to get the approximate strength of the unknown; the other, using the colorimeter, with the standard solution made up to contain the amount of lead shown by the first estimation, added before the sodium sulphide solution, so that in both unknown and standard solutions the colour was developed under the same conditions. That this was intended and was done is shown later in my paper,[2] where it is stated that the solutions compared must be of approximately the same strength (see also Avery, page 189), and that to this end "in all estimations a trial estimation is first made, and from this result the standard is obtained for the final comparison, if the maximum accuracy is required."

This was made clear to Dr. Taylor in a discussion of the work. In view of the stress laid on this point by Avery, and since the error occurring when the colours are not developed under the same conditions is known to any who have ever made a colorimetric lead sulphide estimation, it is unlikely that any misconception would arise as to the method employed by me in the minds of those aware of the way in which the Avery method is used.

High and Low Results.

Taylor's criticism is inconsistent for the following reasons. It is pointed out that the results reported by me are "extraordinarily high." Yet all his

[1] This work carried out under the control of the Cancer Research Committee of the University of Sydney, and with the aid of the Cancer Research and Treatment Fund.
Submitted for publication March 25, 1931.

subsequent criticism is calculated to show that my results should have been low.

On page 678 of THE MEDICAL JOURNAL OF AUSTRALIA, May 24, 1930, assuming that the addition of lead is made after the addition of the sulphide in the final estimation, figures are quoted (Table VI) which show that the results so obtained would be 20% to 25% low.

On page 677 of the same journal, "The figures given by Bishop and Cooksey in 'An Additional Note on the Occurrence of Lead in the Egg of the Domestic Hen,' THE MEDICAL JOURNAL OF AUSTRALIA, November 9, 1929, indicate that all the lead is not extracted by treatment with hydrochloric acid." It is not clear on what figures this statement is made, as the only figures given in that paper are as quoted below (the original table number is adhered to).

TABLE II.

No.	Weight in Grammes of Dry Material Used for Analysis.		Milligrammes of Lead found in Material Used.		Milligrammes of Lead per One Yolk and White.		Number of Eggs from which Sample was taken.
	By Bishop.	By Cooksey.	By Bishop.	By Cooksey.	By Bishop.	By Cooksey.	
1	14·4	20·0	0·09	0·102	0·090	0·075	11
2	12·0	20·0	0·068	0·091	0·068	0·052	14
3	14·5	20·0	0·102	0·157	0·102	0·114	12
4	Egg preserved in water glass from June, 1927.				0·086	0·080	2

These figures indicate that the results are in very close agreement, an agreement all the more striking when it is remembered that the method used by Dr. Cooksey is the metabisulphite method introduced and used by Taylor in his work. This fact is dismissed by Taylor as requiring no further comment and that the errors in Bishop's method "must also exist in the new method as applied by Bishop and Cooksey to confirm the results of Bishop." This is obviously not so. The method used by Cooksey is not "new," and as given in our joint paper is identical with that used by Taylor, but for four points:

(1) Copper acetate is not added when the lead is separated as the sulphide.

(2) The sulphide precipitate is dissolved and reprecipitated as the sulphide to remove iron which interferes with the final sulphite estimation.

(3) The sulphide is allowed to stand overnight to complete precipitation, and not centrifuged immediately as is done by Taylor.

(4) The metabisulphite solution used is saturated and not a 10% solution.

It is considered that serious losses occur unless the lead sulphide precipitation is allowed to stand overnight. In this regard Avery states that "a very serious loss of lead may occur unless the conditions set out above are rigidly adhered to" and insists that it is necessary to stand overnight to insure complete precipitation. It is also stated that a definite acidity of the solution is necessary and shall be very close to one-twentieth normal hydrochloric acid; whether Taylor's description of "made slightly acid to methyl orange" is of this order or normality is not known.

It was only when the conditions as given by Cooksey in our paper were followed that repeatable results with the "sulphite" method were obtained.

With regard to "the probability of loss through solubility when so small a quantity of lead is precipitated as lead sulphate" (Taylor, page 677), in my paper I state under "Sources of Loss" that "the main source of loss still appears to be due to the solubility of lead sulphate in the alcoholic washings, as pointed out by Avery (*loco citato*)," but Tables II, III, IV, V, VI and VII in this paper indicate that this loss is not sufficient to invalidate results obtained with amounts of lead ranging from 0·01 to 0·30 milligramme, when the volume is kept small as in the method described.

Variation of Lead with the Amount of Sample Used.

A most surprising feature of Taylor's results is to be found in page 676 of his paper in Table I and the comment "From a consideration of these figures it will be seen that the amount of lead present does not exceed 0·01 milligramme, *and is independent of the amount of egg material taken for analysis.* From this it would appear that portion of even this small amount of lead is due to contamination." (The italics are mine.) If lead is being estimated in the eggs, it is reasonable to expect a variation in the total amount found with the amount of the sample taken for analysis, even if the amount of lead is only 0·01 milligramme per 100 grammes of material.

In the joint note of Bishop and Cooksey it will be found that the amount of lead determined by either method depends on the amount of the sample taken for analysis. Thus the amount in 20 grammes is more than in 14 grammes of material, but the amount calculated per 100 grammes from both results is very nearly the same. These results should thus present a truer picture of the amount of lead present originally than those which are independent of the amount of material used. In the extraction of the char Taylor uses one part of hydrochloric acid to two parts of water. This was found by Cooksey and Bishop to be too dilute for complete extraction of the lead in the char, and could in itself lead to low results.

Lead Compounds in the Egg.

In an earlier paper[3] the author describes the isolation and identification of the lead compound in eggs. For this purpose 31·5 kilograms of wet yolks were treated with specially purified lead free reagents. The details of the purification need not be repeated here, but it is certain that contamination from this source did not occur. Further, the volumes of the solutions used were small, being redistilled and used over again.

From this amount of material a total of 296·63 milligrammes of lead compound (later identified as two compounds) were isolated. From this figure it was calculated that each yolk of the 1,750 used in the 31·5 kilograms contained 9·044 milligrammes of lead per yolk, corresponding to 0·246 milligramme of lead per 100 grammes. It does not therefore appear that the figure arrived at from individual analysis

is much lower than this, and thus gives support to the figures given in my first paper.

In conclusion, the following is a summary of the method used since June, 1928, for the estimation of the lead after charring and extraction of the char with strong hydrochloric acid. The method is an adapted Avery method. Copper acetate is not used to aid the lead precipitation as the sulphide. Lead solution is not added to the unknown at any stage of the estimation. The final comparison is made in two stages: the first by running in the standard lead solution from a burette until the colour is the same as that in the unknown, and then making up a fresh standard for comparison containing the amount of lead found from the first determination, the sodium sulphide being added last so that the colours in both solutions are developed under the same conditions.

Summary.

1. The criticism of Taylor is inconsistent in that the results criticized are first stated to be "extraordinarily high," while the evidence produced by Taylor is advanced to show that they should be low.

2. The method used by Taylor is the more likely to give low results for the following reasons:

(*a*) The amount of lead recovered by him from the eggs is independent of the amount of material taken for analysis.

(*b*) The lead sulphide precipitation is not allowed to stand overnight but centrifuged after precipitation.

(*c*) The acid used to extract the char has been found to be too dilute to remove completely the lead.

3. Cooksey's method is described as "new," yet except for alterations necessary to produce repeatable results, the final comparison is made as in Taylor's own method, namely, by the use of metabisulphite. On the same material the results obtained by Cooksey using this method have been found to agree with those of Bishop using the sulphide method as previously recorded.[4]

4. That the figure for lead present in eggs is of the order found by the writer is supported by the recovery and identification of the lead compounds from 31·5 kilograms (1,750 yolks) of yolk material giving a value of 0·246 milligramme of lead per 100 grammes of yolk.

Acknowledgement.

I have pleasure in acknowledging my indebtedness to Dr. H. G. Chapman, Director of Cancer Research, for his kindly and constructive criticism of this work in all stages of its progress.

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[2] W. B. S. Bishop: "The Occurrence of Lead in the Egg of the Domestic Hen (Part 1)," THE MEDICAL JOURNAL OF AUSTRALIA, April 21, 1928, page 480.

[3] W. B. S. Bishop: "The Occurrence of Lead in the Egg of the Domestic Hen (Parts 2 and 3)," THE MEDICAL JOURNAL OF AUSTRALIA, January 26, 1929, page 96, and June 15, 1929, page 792.

[4] W. B. S. Bishop and T. Cooksey: "The Occurrence of Lead in the Egg of the Domestic Hen (An Additional Note)," THE MEDICAL JOURNAL OF AUSTRALIA, November 9, 1929, page 660.

[5] R. Tannahill: "The Excretion of Lead and Blood Changes in Workers Exposed to Lead," THE MEDICAL JOURNAL OF AUSTRALIA, February 16, 1929, page 197.

[6] H. B. Taylor: "A Criticism of Recent Work on the Presence of Lead in the Egg of the Domestic Hen," THE MEDICAL JOURNAL OF AUSTRALIA, May 24, 1930, page 675.

Reports of Cases.

AMŒBIC HEPATIC ABSCESS IN A NEW BRITAIN NATIVE.

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INFECTIONS with *Entamœba histolytica* are infrequent in New Britain, while amœbic hepatitis, especially in natives, is of such rarity that the following case appears worthy of note.

The patient, an adult male, New Britain native, was admitted to hospital on August 21, 1930, with a history of fever and cough for about two months. As with all natives, any history was difficult to obtain, but, as far as could be determined, there was no previous attack of dysentery.

On examination the patient's temperature was 39·4° C. (103° F.), the pulse rate 120, respirations 30. The tongue was slightly furred; slight pyorrhœa was present; there was no sign of any jaundice; the body was rather wasted in appearance. The heart's apex beat was in the fifth intercostal space, eight centimetres (three and a half inches) from the mid-line. There was no evidence of increased cardiac dulness to the right of the sternum, and the heart sounds were normal. Except for scattered coarse moist sounds at the bases of both lungs, examination of these organs presented no abnormalities. There were no signs, such as dulness or altered respiratory sounds, at the base of the right lung to suggest any upward enlargement of the liver. Abdominal respiratory movements were good. The spleen was enlarged, with a firm consistency, its lower pole reaching 7·5 centimetres (three inches) below the costal margin. The liver was also grossly enlarged, its edge, which was sharp, being 6·5 centimetres (two and a half inches) below the costal margin. It moved with respiration and was firm, though slightly tender. The kidneys were not palpable, and there was no evidence of ascites. No enlarged lymph glands were noted anywhere. The urine contained neither albumin nor sugar. Microscopical examination of a centrifuged deposit showed only an occasional epithelial cell and some *débris*.

A thin blood film showed occasional trophozoites of *Plasmodium vivax* and trophozoites and gametocytes of *Plasmodium falciparum*. He was given quinine bisulphate 0·6 gramme (ten grains) in solution three times a day. The leucocytes numbered 9,500 per cubic millimetre. The differential white count was as follows:

Polymorphonuclear neutrophile cells	71%
Polymorphonuclear eosinophile cells	1%
Large lymphocytes	8%
Small lymphocytes	3%
Large mononuclear and transitional cells ..	17%

No myelocytes were seen.

From the day of admission until August 25, 1931, he remained the same, running a swinging temperature from 37·3° C. (99·2° F.) to 38·8° C. (102° F.). During this time the following laboratory examinations were performed.

Sputum was examined with Ziehl-Neelsen stain and no *Bacilli tuberculosis* were seen; with Gram's stain staphylococci and streptococci were found to be present with pus cells. The stools were examined for parasitic ova. Numerous *Ascaris lumbricoides* ova, occasional *Ankylostoma duodenale* and some *Trichuris trichiura* ova were present. The stools were examined for protozoa. *Endolimax nana* cysts and *Entamœba coli* cysts were present.

On August 25, 1931, he was given carbon tetrachloride three cubic centimetres and oil of chenopodium one cubic centimetre, followed two hours later by magnesium sulphate. His temperature fell to normal, and remained normal until August 28, 1931, when it again rose to 39° C. (102·2° F.). There was no apparent sign of alteration in the size of either spleen or liver. On this day his white blood cells numbered 9,000 per cubic millimetre and a thin blood film failed to reveal malaria parasites.

During the next three weeks he continued to have evening rises of temperature of varying degree, rising to 37·8° to 38·3° C. (100° to 101° F.). His appetite was moderately good, but there was definite loss of weight and strength, though at times he would leave his bed. There was still no evidence of further liver enlargement, either upwards or downwards, though at times he complained of severe pain in the epigastrium and right hypochondrium. Auscultation failed to reveal any friction rub. There were no signs of sepsis elsewhere to account for the rise in temperature. The following laboratory examinations were made during this time.

On August 28, 1931, the stools were examined for protozoa; none were seen; they were examined again on September 2, 1931, and none were seen.

On September 2, 1931, the stools were examined for parasitic ova; *Trichuris trichiura* ova were seen. The leucocytes numbered 8,600 per cubic millimetre.

On September 7, 1931, the leucocytes numbered 9,200 per cubic millimetre. The stools were examined for protozoa. An occasional *Entamœba coli* cyst was seen. *Entamœba nana* cysts were present and a very occasional *Entamœba histolytica* cyst was seen. In a thin blood film no malaria parasites were seen.

On September 10, 1931, the stools were examined for protozoa. *Entamœba coli* and *Entamœba nana* cysts were present. No *Entamœba histolytica* cysts were seen.

On September 13, 1931, the stools were examined for protozoa; no protozoa were seen. On examination for ova, *Trichuris trichiura* ova only were seen.

Blood examination revealed the following information:

Red blood corpuscles, per cubic millimetre	4,000,000
Hæmoglobin value	60%
White blood corpuscles, per cubic millimetre	9,000
Polymorphonuclear neutrophile cells ..	70%
Polymorphonuclear eosinophile cells ..	1·5%
Lymphocytes	15%
Large mononuclear and transitional cells	13·5%

On September 17, 1931, the white blood corpuscles numbered 8,500 per cubic millimetre. The dose of quinine was reduced to 0·6 gramme (ten grains) a day. During the next two weeks his condition remained unchanged. Several further stool examinations again failed to reveal *Entamœba histolytica*. On no occasion were his white blood corpuscles found to number more than 9,500 per cubic millimetre. On October 4, 1931, it was noticed that his liver had enlarged downwards more, and the pain in his right epigastrium became more severe. A few days later a slight icteric tint was noted in the conjunctivæ.

In the absence of leucocytosis and with the fact that on only one occasion had I seen *Entamœba histolytica* cysts, which were scarce, and owing to the general opinion of the rarity of amœbic infections in New Britain, especially hepatic abscess, in natives, I decided to wait a little longer before either undertaking laparotomy or trying the effect of emetine therapy.

Further enlargement of the liver continued until, by October 15, 1931, its edge had reached the umbilicus. A swelling, about 3·75 centimetres (one and a half inches) in diameter could now be felt in the anterior surface of the liver, five centimetres (two inches) above the edge. On October 16, 1931, his white blood cells were 8,200 per cubic millimetre, but, as he had run a swinging temperature between 37·2° C. (99° F.) and 39·5° C. (103° F.) during his stay in hospital, and his general condition was poorer I decided to explore his liver region.

On October 18, 1931, under local anæsthesia (1% "Novocain" solution), I made an upper abdominal right paramedian incision, retracting the rectus muscle. The liver was exposed and found to be adherent to the anterior abdominal wall by recent adhesions, and to be bulging slightly. A "Record" syringe needle was passed into the liver and typical "anchovy sauce" pus aspirated. After aspirating 300 cubic centimetres (ten ounces), the abscess cavity was opened. It was found to be at a depth of 2·5 centimetres (one inch) from the surface of the liver. The cavity was washed out with saline solution, and a rubber drain tube, with a gauze drain alongside, sewn in. The abdomen was closed in the usual way. Microscopical examination of the pus revealed degenerated liver tissue and a few examples of vegetative *Entamœba histolytica*.

Drainage was very free from the tube from then on, and many sloughs separated. Examination of the pus next day showed large numbers of vegetative *Entamœba histolytica*. The abscess cavity was syringed, at first twice, then once a day with, for two days, saline solution, then quinine solution one in 1,000. Commencing from the day of operation he was given a full course of twelve daily injections of emetine hydrochloride 0·06 gramme (one grain). His temperature after operation did not rise above 37·7° C. (99·8° F.). Daily irrigations were continued until October 30, 1931, when the drainage had considerably lessened. The drain tube was shortened and finally the wound closed on November 7, 1931, twenty days after operation. Further stool examinations failed to reveal *Entamœba histolytica*. He was steadily increasing in weight; his cough completely vanished after his course of emetine, and he was discharged from hospital after being under observation for a short period more.

Points of interest in this case are:

1. Amœbic hepatic abscess occurring in a New Britain native.
2. Persistent low leucocyte count in the presence of a large abscess.
3. Absence of clinical evidence of upward enlargement of the liver, which is common with amœbic abscess. (I had no X ray plant.)
4. Only on one occasion was *Entamœba histolytica* found in the stool while the patient was in hospital. It is a well known fact that persons with *Entamœba histolytica* infections may pass cysts only at intervals, but numerous stool examinations were made over a period of three months, with only one positive finding.
5. Absence of any history of dysentery—a not uncommon finding with *Entamœba histolytica* infections.
6. Rapid disappearance of cough following emetine therapy. Pulmonary amœbic infections are not unknown, and though there was no direct evidence, it may be that his bronchitic condition, which completely disappeared, was due to the same infection.

Reviews.

A TEXT BOOK ON THERAPEUTICS AND MATERIA MEDICA.

THE first edition of Potter's "Therapeutics, Materia Medica and Pharmacy" was issued in 1887. The book established for itself so good a reputation that its fifteenth edition has now been published.[1] It is an excellent compendium of our knowledge of drugs and their uses, with advice as to the methods of administering them. Nearly all the drugs and preparations in use are dealt with. Wholesome advice is contained in the pages. It is expressly stated that it must not be inferred that the mention of any drug or preparation necessarily carries with it any endorsement. Again, it is pointed out that the animal extracts, except thyreoid and possibly some others, are active medicinally only when hypodermically injected, most of them being altered or destroyed in the stomach or prevented by the liver from gaining the general circulation. Beginning with definitions of the terms used, the book describes the constituents of organic drugs, such as alkaloids, glucosides and other principles, and passes on to the classification of medicines in alphabetical order. Then we have the various methods of administration, with dosage and observations on cumulative action. Very useful remarks are made concerning drugs which may produce integumentary eruptions or which may affect the colour of the urine or fæces or cause the urine to reduce Fehling's solution, together with a list of those which may be excreted in the milk. The main part of the work deals

[1] "Therapeutics, Materia Medica and Pharmacy," by S. O. L. Potter, A.M., M.D., M.R.C.P.; Fifteenth Edition. Revised by R. J. E. Scott, M.A., B.C.L., M.D.; 1931. Philadelphia: P. Blakiston's Son and Company. Royal 8vo., pp. 1012. Price: $8.50 net.

with *materia medica* and therapeutics, the drugs being arranged alphabetically from *Abrus* to *Zingiber*.

In most respects the book has been brought up to date, but there are a few noteworthy omissions; no reference is made to the use of the sulphocyanates in arterial hypertension nor of the newest local anæsthetic, "Percain." The briefest mention is made of gold salts in the treatment of tuberculous diseases. There is no reference to the serum treatment of scarlet fever, measles and infantile paralysis. "Plasmoquine" (for malaria) also finds no place. Ether and alcohol are stated to be, in their early effects, cerebral stimulants, which is contrary to the accepted teaching. Why does the author state that methyl alcohol should not be used externally on the body? The possible dangers attending the use of cinchophen ("Atophan") are not indicated, and no mention is made of contracted pupils as manifestations of poisoning by eucalyptus oil. Eucalyptus gum (kino) is not obtained from *Eucalyptus globulus*, as the text would imply. The iodides are recommended for lead poisoning, whereas many authorities believe that such treatment may restart the circulation of lead harmlessly deposited and so set up an acute lead poisoning. For asthma the smoking of coca leaves and hypodermic injections of cocaine are advised; surely a habit of addiction might thus readily be engendered. No mention is made of vitamin deficiency in the ætiology of pellagra, nor of sodium hyposulphite (or thiosulphate) in poisoning by arsenobenzol, bismuth or mercury in the treatment of syphilis. The futility of large doses of alcohol in snake bite is clearly set out. An interesting recommendation is the combination of potassium iodide and nitroglycerine in disorders of the climacteric. A useful table is given of the iron content of foods as ready to serve. Duboisine (a mixture of hyoscine and hyoscyamine) is given consideration. It is strange that this substance, obtained from an Australian tree, should be well known and extensively used in the United States and the Continent of Europe while it is practically unknown in its country of origin. Some mistakes in spelling are noted. Surely "miotics" should be "myotics" and "cocoanut" should certainly be "coconut." On page 21 we read "auminum," the missing letter from which will be found in "clreolin" immediately below. An unusual term used in the book is "galactophyga," which signifies agents which diminish or arrest the secretion of milk.

In spite of some defects, this work still holds a prominent and very useful place among the text books on therapeutics and *materia medica*. Special parts are also devoted to pharmacy and prescription-writing, including incompatibility. The part devoted to special therapeutics deals with applied therapeutics (from abortion to yellow fever) in alphabetical order; also poisoning, antidotes and antagonists being indicated. An appendix includes Latin terms, thermometric equivalents, weights and measures, and percentage solutions.

CONFESSIONS AND ADVICE FROM A GENERAL PRACTITIONER.

"GENERAL PRACTICE" is a brisk *résumé* of further experiences by Dr. Ernest Ward, and should prove useful to the newly qualified.[1] He describes the various types of practice and praises the panel as an ideal means of introduction to a district and less likely to be corrupt than the old-fashioned club. His candour in regard to his youthful experiences in surgery is refreshing; he refused only cleft palate; he tackled mastoids and hysterectomies with equal temerity, but advises the young doctor to seek the services of a surgeon for major operations and to confine his activities to minor surgical procedures.

Matrimony is sensibly discussed and he has a kindly word for the wife left lonely while meetings are attended and journals studied. Advising against early marriage, he quotes Descartes: "An impulse, a thrill and a disappointment." Yet the cynical proverb: "The secret of success in life is to be unhappily married," is not applicable to the general practitioner, as a wife's tact, consideration and sympathy are more helpful than is usually realized.

He points out how many consultants owe their success to a facility for phrase making, which, next to an attractive personality and evidence of practical ability, is a great asset, and he offers suitable answers to the inevitable questions which may confuse the newly fledged doctor. His advice on the financial side of general practice is sound, and with a special word of recommendation for the medical journals available, he discusses insurance, therapeutics, exceptional cases, unorthodox treatment. He advises philanthropy whenever it appears to be necessary. In conclusion he quotes Confucius: "To know that you know what you know, to know that you do not know that which you do not know, *that* is to know."

[1] "General Practice (Some Further Experiences)," by Ernest Ward, M.D., F.R.C.S.; 1930. London: John Bale, Sons and Danielsson Limited. Crown 8vo., pp. 108. Price: 3s. 6d. net.

TREATMENT BY ULTRA-VIOLET RAYS.

LIKE other remedies, the ultra-violet rays are as capable of harm when wrongly administered as of good when used with care and discrimination. In his preface to his short and concise book on "Ultra-Violet Radiotherapy"[1] Dr. W. Kerr Russell writes: "It seems desirable that an attempt should now be made to give all medical students some general instruction in regard to physiotherapy," and of the need for this there can be no doubt. But until some systematic attempt is made to teach this important subject those who wish to make use of physiotherapeutic remedies can obtain the required knowledge only by means of the writings of those who are themselves employing such methods. A work such as the one under review, concise, dogmatic and understandable, which deals fully with its subject, offers the necessary opportunity of acquiring a knowledge of the indications for the use of ultra-violet radiations and the technique best calculated to make them effective. The book is one of the "Modern Treatment Series" and the writer is restricted to a limited space, so that every word must have a bearing on the subject with which the book deals. Dr. Kerr Russell has succeeded in effecting this object. He deals with the radiations from every point of view, and anyone who studies the book and follows its directions, should be capable of administering the remedy with advantage to his patients. Like other writers on this and allied subjects, Dr. Russell has found the rays effective in a wide range of diseases, generally as adjuvant to other methods of treatment. Possibly those who make use of the remedy will not have the same success as he in some of the conditions in which he, or other of those whom he quotes, has found it effective. But only personal experience can show of what the rays are capable when properly administered. The cost of the book is small and it can be recommended to those desirous of knowledge of the subject with which it deals.

[1] "Ultra-Violet Radiotherapy," by W. Kerr Russell, M.D., B.S.; 1930. London: Jonathan Cape Limited. Crown 8vo., pp. 130. Price: 5s. net.

ACCLIMATIZATION.

SIR ALDO CASTELLANI, in his brochure, "Climate and Acclimatization," has again given proof of that industry with which he accumulates scientific observations.[2] He states in his preface that it is not intended that this publication should be a comprehensive work dealing with all branches of the subject. Nevertheless, he has ably succeeded in recording in small compass a considerable amount of the literature upon climate and its reputed (and disputed) effects upon man.

Much of the physical and geographical data follows that contained in the well known "Manual of Tropical Medicine" which, published by Castellani in combination with Chalmers, has passed through several editions and

[2] "Climate and Acclimatization, Some Notes and Observations," by A. Castellani, K.C.M.G., D.S.C., M.D., F.R.C.P.; 1931. London: John Bale, Sons and Danielsson. Crown 8vo., pp. 159, with charts. Price: 7s. 6d. net.

has remained a popular text book for a good many years. The new matter introduced includes, *inter alia*, a recognition of the observations made at Townsville, in tropical Australia.

Throughout the book the author appears to betray an insufficient appreciation of the important distinction that exists between the mere sojourner in the tropics (from whose exotic experience most of his data is drawn) and the actual resident in the tropics, who is born into tropical residence and reacts successfully to his environment at his most adaptable age.

The section devoted to acclimatization is disappointing in this regard and, incidentally, the author has apparently overlooked the significance of such small physiological variations as are said to occur from the point of view of protective adaptation. Reference to diminished resistance and fertility in Europeans born and resident in the tropics for "three generations and more" provokes speculation as to the origin of the relevant figures. Pure-bred Europeans of the third tropically born generation are as yet too rare to provide authenticated data, but the tendency of Australian records is decidedly not in the direction suggested by Castellani.

The suggestion that the term *Cacophoria tropicalis* is a justifiable addition to the demography of the tropics is, perhaps, an instance of special pleading, in line with the author's well known contention that climate *per se* has a deleterious effect upon the health of residents within the tropics, and might evoke as a synonym *Cacophoria ab usu inepto!*

The multiplicity of references throughout the work is perhaps a disadvantage, since the more important are thus relatively obscured; and the quotations from Burton's "Anatomy of Melancholy" would also appear to be unhappy, since they support no present-day conception, and are mainly founded on observations necessarily faulty and expressed in accordance with theories no longer tenable.

A few typographical errors exist, an unfortunate example being the reference on page 28 to the approximately constant body temperature of man as "round about 84° Fahrenheit."

A valuable bibliography, which will be of use to students of the subject, completes this interesting *interim* study.

Analytical Department.

"VITA B": BIOLOGICAL EXPERIMENTS.

IN a previous report in this journal on the Australian vitamin food known as "Vita B" and which consists of pure wheat germ, an account was given of the general high standard of the product. At the same time we announced that biological experiments which were then in progress gave promise of a gratifyingly high vitamin *B* content of the product. A comprehensive series of experiments has now been finalized, and they prove that the vitamin *B* content of this product is high. Throughout the investigation "Vita B" has been compared in parallel experiments with an imported product of similar composition.

The experiments were conducted on rats which were a first cross of albino males with Lister strain females. In all, twenty-three young rats were used, and experiments were so planned as to eliminate the possibility of coincidence leading to an apparent superiority of one or other product.

The animals were placed soon after, or in some cases immediately after, weaning on the basal diet used in the Lister Institute for vitamin work on rats.

The composition of the diet[1] was as follows:

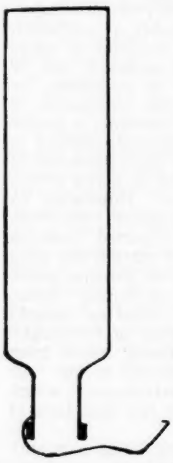
Purified casein	20 parts
Rice starch	60 parts
Cotton seed oil	15 parts
Salt Mixture No. 185	5 parts
(Water	100)

The casein was purified according to the directions of Chick and Roscoe.[2]

Cod liver oil of high vitamin *A* and *D* content was spread over this basal diet each day so as to ensure that an adequate amount of vitamin *D* had to be taken. The basal diet was renewed daily and an excess was always given. The vitamin B-containing food, either local or imported, was given in a fixed, accurately weighed quantity to each rat daily. The vitamin food was placed in a special container so constructed that the rats were unable to waste any of the food. The whole of each dose of the vitamin food was eaten daily. No special care had to be taken to insure this, as the rats would remain eating until the whole was consumed, except when a daily dose of 2·5 grammes was given to very young rats, when a little was sometimes not consumed till the next day. However, in every case the whole dose was always taken within the twenty-four hours.

The rats were kept singly in cages with wide meshed wire screen bottoms.

Distilled water was always available. The usual type of medicine bottle with capillary tube feed was found to give constant trouble, and a modified bottle as shown in the accompanying diagram was constructed which gave infinitely less trouble. This consists of a sixty cubic centimetre bottle twelve centimetres long with a neck. Over the lip of the opening is squeezed an aluminium cap three centimetres in diameter so that it rides on the lip, and the redundant portion of the cap forms a cup. When the filled bottle is inverted the water feeds out in a perfectly automatic manner.



The rats were weighed every week. Each experiment was of at least one month's duration.

Details of Experiments.

Experiment I.—Six rats from two litters were put together in a large cage and weaned straight on to the basal diet *plus* cod liver oil. At the beginning there were eleven rats, but after a few days three rats had been killed and eaten by their litter mates, and two rats died subsequently from injuries received. At the end of seven days all the rats showed some evidence of vitamin *B* deficiency; most of them were in a very miserable condition. They were sluggish, had greasy coats, and several showed alopecia. Some had gained weight, but these were probably the ones who had had their cannibalistic appetites somewhat appeased.

The experiment was now begun. The result is shown in Table I.

Experiment II.—Rats numbers 1 and 2 continued on their respective diets. Rats numbers 3, 4, 5 and 6 were given basal diet *plus* cod liver oil and no vitamin *B* for one week. Rats numbers 3 and 4 were then given imported germ, rats numbers 5 and 6 Australian germ, and this diet continued for one month. The result shown in Table II.

Even after one week without vitamin *B* these rats showed definite effects. Two rats had lost weight and only one gained weight. Except for the one that gained weight, the coats were shaggy, dull and greasy, and all the animals were sluggish. Rat number 5 had diarrhœa. After a few days on the vitamin they were quite healthy again. Rat number 2 appears to have been particularly resistant to vitamin *B* lack, and though his weight decreased slowly showed no definite evidence of other changes. In these experiments rats numbers 3 and 4 on "Vita B" gained more than rats numbers 5 and 6 on imported germ respectively, and rats numbers 5 and 6 on "Vita B" gained more than rats numbers 3 and 4 on imported germ respectively.

Experiment III.—Three rats of the same litter were weaned straight on to a diet containing basal diet *plus* cod liver oil *plus* 0·25 gramme "Vita B" and 0·25 gramme imported germ daily. At the end of seven days they were given diets as in Table III.

These animals were given as even a start as possible, but again the result was in favour of "Vita B."

Experiment IV.—Experiment IV was begun in early winter, and two litters of young rats were used in addition to the rats

TABLE I.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight at End of Four Weeks in Grammes.	Gain in Weight in Grammes.
1 ♀	Mixed	31·0	69·0	38·0
2 ?	Basal + Cod liver oil	49·3	49·0	−0·3
3 ♀	Basal + Cod liver oil + 0·5 gramme "Vita B" daily	45·0	67·5	22·5
4 ♀	Basal + Cod liver oil + 2·5 grammes "Vita B" daily	29·0	76·5	47·5
5 ♀	Basal + Cod liver oil + 0·5 gramme imported germ daily	47·0	58·5	11·5
6 ♂	Basal + Cod liver oil + 2·5 grammes imported germ daily	32·0	66·0	34·0

TABLE II.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight at End of One Month in Grammes.	Gain in Weight in Grammes.
1 ♀	Mixed	74·5	92·0	17·5
2 ?	Basal + Cod liver oil	45·0	Died after five weeks, without vitamin *B*.	
5 ♀	Basal + Cod liver oil + 0·5 gramme "Vita B" daily	50·5	71·0	20·5
6 ♂	Basal + Cod liver oil + 2·5 grammes "Vita B" daily	68·5	102·0	33·5
3 ♀	Basal + Cod liver oil + 0·5 gramme imported germ daily	66·5	80·5	14·0
4 ♀	Basal + Cod liver oil + 2·5 grammes imported germ daily	76·5	102·5	26·0

TABLE III.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight after One Week in Grammes.	Weight One Month Later in Grammes.	Gain in Weight in Grammes.
7 ♀	Basal + Cod liver oil + 0·25 gramme "Vita B" and 0·25 gramme imported germ	39·5	43·5	81·5 (same diet)	38·0
8 ♂	Basal + Cod liver oil + 0·25 gramme "Vita B" and 0·25 gramme imported germ	42·5	46·5	75·0 (0·5 gramme "Vita B")	28·5
9 ♂	Basal + Cod liver oil + 0·25 gramme "Vita B" and 0·25 gramme imported germ	40·5	46·5	69·5 (0·5 gramme imported germ)	23·0

TABLE IV.

Older Rats (the original numbering retained as in other two experiments).

Rat Number.	Diet.	Initial Weight in Grammes.	Weight after Six Weeks in Grammes.	Gain in Weight in Grammes.	
1 ♀	Mixed	91·0	112·0	21·0	
8 ♂	Mixed	78·0	173·0	95·0	
3 ♀	Basal + Cod liver oil + 1 gramme "Vita B"	87·0	121·0	34·0	
4 ♀	Basal + Cod liver oil + 1 gramme "Vita B"	105·5	128·5	23·0	average 35·0
9 ♂	Basal + Cod liver oil + 1 gramme "Vita B"	85·0	133·0	48·0	
5 ♀	Basal + Cod liver oil + 1 gramme imported germ	79·0	109·0	30·0	
6 ♂	Basal + Cod liver oil + 1 gramme imported germ	104·5	119·0	14·5	average 21·0
7 ♀	Basal + Cod liver oil + 1 gramme imported germ	100·0	118·5	18·5	

TABLE IV (*continued*).

Freshly Weaned Rats.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight after Fourteen Days in Grammes.	Weight after Six Weeks in Grammes.	Gain in Weight in Grammes.	
10 ♂	Mixed	24·0	48·5	104·0	80·0	
11 ♂	Mixed	23·0	53·5	98·5	75·5	
12 ♀	Mixed	17·0	48·5	84·0	67·0	
13 ♀	Basal + Cod liver oil + 1 gramme "Vita B" ..	24·0	43·0	83·0	59·0	
14 ♂	Basal + Cod liver oil + 1 gramme "Vita B" ..	29·0	37·5	55·0	26·0	
15 ♀	Basal + Cod liver oil + 1 gramme "Vita B" ..	24·0	43·5	73·0	49·0	average 46·0
16 ♀	Basal + Cod liver oil + 1 gramme "Vita B" ..	26·0	42·5	76·0	50·0	
17 ♀	Basal + Cod liver oil + 1 gramme imported germ ..	29·5	37·5	57·5	28·0	
18 ♂	Basal + Cod liver oil + 1 gramme imported germ ..	25·5	46·0	72·0	46·5	
19 ♂	Basal + Cod liver oil + 1 gramme imported germ ..	24·5	35·5	48·0	23·5	average 38·0
20 ♀	Basal + Cod liver oil + 1 gramme imported germ ..	26·5	44·5	80·0	53·5	

TABLE V.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight Seven Weeks Later in Grammes.
21 ?	Basal + Cod liver oil + 1 gramme "Vita B" weekly	31·5	Died in a fortnight.
22 ♀	Basal + Cod liver oil + 1 gramme "Vita B" weekly	29·5	37·0 Had diarrhœa at times, coat very poor, sluggish often despaired of.
23 ♂	Basal + Cod liver oil + 1 gramme "Vita B" daily	29·5	72·0

TABLE VI.

Rat Number.	Diet.	Initial Weight in Grammes.	Weight Four Weeks Later in Grammes.
22 ♀	Basal + Cod liver oil + 1 gramme "Vita B" daily	37·0	69·0
23 ♂	Basal + Cod liver oil + 1 gramme "Vita B" weekly	72·0	67·0

that had previously been used. The rats of the new litters were weaned on to the experimental diets a little too young and did not take to the diet too successfully, so that early in the experiment several showed definite evidence of vitamin lack. This was especially so for the rats having imported germ; for the first fortnight several of the rats on imported germ had to be nursed along by the addition of fresh lettuce to the diet, and when they did begin to establish themselves on the experimental diet the odds were in their favour.

In this experiment, except for the animals on a mixed diet, all the rats had one gramme of the vitamin *B* containing food in addition to the basal diet *plus* cod liver oil.

Before being placed on their experimental diet, rats numbers 3, 4, 5, 6, 7 and 9 were deprived of all vitamin *B* for one week. The results are shown in Table IV.

These animals were allotted as evenly as possible with the advantage, if any, in favour of the imported food.

The result of this large experiment is again in favour of the local product.

Experiment V.—Three rats of one litter were weaned and two placed on basal diet *plus* cod liver oil *plus* one gramme of "Vita B" every week and one on basal diet *plus* cod liver oil *plus* one gramme of "Vita B" every day, and the progress was charted every week. The result is shown in Table V.

This experiment shows that on a constant relatively small amount of "Vita B" rat number 23 doubled the weight of rat number 22 in seven weeks. Rat number 22 was given just enough "Vita B" to keep it alive.

The experiment was then reversed. Rat number 22 was given one gramme of "Vita B" every day, and rat number 23 was given one gramme of "Vita B" every week. The result is shown in Table VI.

Rat number 23 was now very sluggish, with sunken eyes, a scraggy, dull coat, and looked very miserable, and like all the other animals experiencing vitamin *B* deficiency felt cold to the touch. Rat number 22 was a healthy, active rat with an excellent coat.

These experiments confirm previous work done in England and America as to the profound influence vitamin *B* has on growth and general well-being, and that the germ of the wheat contains a very plentiful supply of this vitamin.

The high vitamin *B* content of Australian wheat is very gratifying, and a general survey of the comparative value in vitamin of Australian foods with the same food grown in other countries seems urgently required.

The general conclusion from our investigations of this product is that "Vita B" can be confidently recommended. It is prepared in an exemplary manner and is adequately tested biologically for its vitamin *B* content.

References.

(1) W. R. Aykroyd and M. H. Roscoe, *Biochemical Journal*, Volume 23, 1929, page 484.
(2) H. Chick and M. H. Roscoe: "The Dual Nature of Water-Soluble Vitamin B," *Biochemical Journal*, Volume 22, January–June, 1928, page 793.

The Medical Journal of Australia

SATURDAY, AUGUST 15, 1931.

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WORKERS' COMPENSATION PRACTICE.

THERE are unfortunately some members of the British Medical Association in Australia who decry the Association and the value of membership; they assume this attitude because the *modus operandi* is not in accord with their preconceived ideas. One of their commonest themes for dissatisfaction is workers' compensation practice. It matters comparatively little to these malcontents that the British Medical Association exists primarily for the study of medicine as a science and for the dissemination of knowledge; the utilitarian has been allowed by degrees to become uppermost in their minds and finally to dominate their whole outlook —they would not be content unless all the activities of the Association were given over to medico-political matters. As well as the deliberately malcontentious there are those who are lazy and who, in a semisomnolent state, allow matters to drift. When they are confronted by some difficulty they wake up, wonder vaguely whether they ought to know something about the particular weighty problem, decide that it is someone else's fault that they know nothing about it, blame that someone else (generally the British Medical Association), possibly make themselves unpleasant, and go to sleep again. They are reminiscent of the dormouse of "Alice in Wonderland," except that the dormouse was a pleasant enough, if somewhat pathetic, figure. Workers' compensation practice has been discussed in these pages on previous occasions; the last was in connexion with problems facing medical practitioners in Western Australia. It may be mentioned in passing that the sympathetic and helpful attitude of the Western Australian Branch in regard to amendment of the Western Australian act has earned the appreciation and eulogy of members of the legislature. In the discussion of the Western Australian problem in these pages certain general principles were laid down for the guidance of readers, and since then an opportunity has been given to the Branches to forward for publication statements which might assist their members to understand the provisions and application of the act in each State. Several Branches availed themselves of this opportunity; others found that their requirements were met by the contributions from other States.

The subject is by no means exhausted. In the present issue there appear two important papers read at a meeting of the New South Wales Branch of the British Medical Association by Dr. R. M. Mackay, Chief Medical Referee of the Workers' Compensation Commission of New South Wales, and by Dr. J. G. Edwards. These papers deal with medico-legal difficulties following bone and joint injury. Bone and joint injuries are a source of worry and anxiety, and are more liable than any other to give rise to medico-legal problems. The papers should therefore be studied carefully by all medical practitioners, whether they are engaged in workers' compensation practice or not. There are four points on which emphasis should be laid. The first, stated by Dr. Mackay, is that medical practitioners engaged in workers' compensation practice should become thoroughly conversant with the act of the State in which they live. It was with this object that the Branches were invited to submit articles to the journal. There are still many practitioners in New South Wales who do not know the meaning of the term medical referee and who do not understand their relationship to the insurer or to the patient in the matter of fees. Those who call the law an

ass generally use the name because the interpretation of experts does not agree with their own interpretation.

The second and third points have to do with the clinical examination and special examination by X rays. After all accidents careful notes of the condition found should be made by the medical attendant at the first examination. When a bone or joint is affected and when the patient is entitled to compensation under the *Workers' Compensation Act*, the necessity for careful note-taking is much greater. This statement needs emphasis since many medical practitioners look on note-taking in private practice as a superfluous refinement. As far as X ray examination is concerned, the man who proposes to treat any injury to bone or joint without having an X ray examination made, is certainly asking for trouble. From the medical point of view the X ray examination may not be required, but, should a legal action arise, it will be necessary to convince the court that the omission was justifiable. At the same time, if an X ray examination is made, it must be one that will show the radiographer to be proficient. A skiagram may "show no bony lesion," but, as Dr. Mackay has demonstrated, such a skiagram may sometimes pass for a picture of a London fog or of the mists rising around Mount Kosciusko.

The final consideration has to do with the patient's work. No medical practitioner engaged in the practice of industrial hygiene is regarded as qualified for his job unless he has an understanding of the hazards of an employee's work and of the mental and physical energy which must be expended in its performance. Every medical practitioner attending a worker under the *Workers' Compensation Act* is in fact an industrial hygienist. Dr. Mackay's story of the medical practitioner who "dropped the brick" was very much to the point.

From this short discussion it will be clear that as a result of more intimate knowledge of the act increased care in examination and widened understanding of the conditions of labour on the part of the medical practitioner, the patient will receive adequate treatment, the community will be better served because the act will be more likely to fulfil its destiny, and dissatisfaction among medical practitioners will be less.

Current Comment.

ENDEMIC GOÎTRE.

GOÎTRE occurs endemically in many countries. In some places it is so common that it is regarded as a feature of beauty, and its absence in the individual as a physical detraction. The cause of endemic goître has never been explained to the satisfaction of all authorities, though the theory of iodine deficiency is accepted by most. Certainly the administration of iodine has a beneficial influence, in regard both to the prophylaxis and the therapeusis of the condition. McCarrison believes that infection of the alimentary tract is of the first importance in the ætiology of endemic goître. The question has been discussed previously in these pages. A theory of ætiology has recently been expounded by H. Stott, B. B. Bhatia, R. S. Lal and R. C. Rai, who have investigated the distribution and cause of endemic goître in the United Provinces in India.[1] They remark that endemic goître occurs only in definitely localized areas. The inhabitants believe that it is due to drinking certain waters, and in many instances they are able to recognize the difference between water which does and water which does not contain substances likely to cause goître. Stott and his fellow workers believe that the condition is due to the ingestion of water containing excessive quantities of calcium. People who drink water from shallow wells sunk in soil containing much calcium, or from limestone springs, or from mountain streams flowing through limestone country, are liable to goître. Such water may be so charged with calcium that it becomes milky in appearance during the hot weather. Europeans unable to obtain good water do not become affected with goître, because they first boil the water and thus cause the lime to be precipitated. Goître is not caused by drinking the water from swiftly flowing streams or from rivers in which the calcium has apparently sedimented. In one district there is an area in which the soil contains 32% of calcium; cutting into this area is a tongue of soil containing only 2% of calcium. Among the people living on the area first mentioned the goître rate is ten times as great as on the second area. Stott and his collaborators analysed samples of water from both goîtrous and goître-free areas and found iodine in none of them. Hyperthyreoidism was not observed in the United Provinces, but myxœdema, deaf-mutism and cretinism are common and have a distribution which follows, more or less closely, the distribution of goître.

Though they discuss briefly the influence of poverty, education and associated diseases, Stott

[1] *The Indian Journal of Medical Research*, April, 1931.

and his collaborators, unfortunately, do not mention the questions of hygiene and sepsis. The results of the investigation are not proof that endemic goître is due to excess of calcium in the drinking water. Many other factors require consideration. The iodine content of the food supply should be investigated; estimations should be made of the blood calcium content and the calcium excretion of affected persons. The theory is interesting and worthy of further study.

NARCOLEPSY AND CATAPLEXY.

NARCOLEPSY was first described by Westphal in 1877 and in 1880 Gélineau recognized it as a clinical entity. The syndrome may occur also in the course of other diseases and may follow acute encephalitis. When no cause is recognized, narcolepsy is termed "idiopathic." But even the "idiopathic" form might be a sequel of undetected encephalitis. It may also occur as a symptom of tumour and of inflammatory conditions affecting the structures around the third ventricle of the brain. The disease is characterized by recurring desire to sleep without apparent cause. At the onset there is heaviness and smarting of the eyelids, then profound weariness. Sleep seems imperative, but by great effort the inclination may be checked for a time. Eventually the demand must be obeyed and the patient must lie down or he will go to sleep even standing up and then fall to the ground. Such attacks may last only a few seconds or they may persist for half an hour. The disorder may not be recognized, as the patient may not regard the syndrome as a disease.

With narcolepsy may be associated cataplexy, which manifestation may be precipitated by any emotional stress such as laughter. During the cataplectic attack there is total loss of muscular tonus and power. Consciousness is maintained, but if the patient be not supported he will fall down. Narcolepsy is resistant to treatment and may persist for years without any amelioration. Henry Devine observes that in mild cases much may be effected by directing the life of the individual so that the imperious demand for sleep may be anticipated or assuaged. Bodily activity may inhibit the attacks or prompt submission to them may shorten their duration. J. B. Doyle and L. E. Daniels have published an account of six cases.[1] The ages of the patients varied from eleven to fifty-seven; the sexes were equally affected. The mother and brother of one patient were affected by narcolepsy. In one instance the disease had persisted for ten years. The attacks occurred up to three or even six times a day. The duration of sleep was from four or five up to thirty minutes; one patient slept for one or two hours every afternoon. Sleep seemed natural and happened while the patient was standing and talking to friends or at church or social gatherings, while playing cards or during an ordinary conversation, or while driving by day in an automobile or while standing cooking over a hot stove. In the case of a schoolboy the attacks occurred during lessons at the school. One patient had to take several naps every day and retire early at night. Lack of initiative followed the attacks in one case. Sometimes the patient could be aroused only with difficulty or not at all. One patient on awakening struck his friends without realizing what he was doing. Amongst unhappy results were two motor car accidents.

Among the cataplectic phenomena observed were a weakness of the knees causing by laughing. In another case on laughing or being surprised attacks of weakness overcame the patient, who fell to the ground. In another one on laughing or becoming excited vision became momentarily dull, the head shook and the muscles became relaxed. In another instance, while the patient was driving a motor car, laughing was followed by marked weakness of the arms and the hands dropped from the wheel. And so on.

The treatment of narcolepsy has been notoriously unsatisfactory and must remain so until the pathogeny of the disorder is elucidated. Until that has been effected, treatment can be only a groping in the dark or at best merely symptomatic. Some of the methods of treatment are amazing. When post-encephalitic, benefit has seemed to follow the administration of iodine or iodides by the intra venous route or by mouth. Lumbar puncture has seemed to benefit the idiopathic form as well as the post-encephalitic; but the apparently idiopathic attack may have followed undetected encephalitis. For the idiopathic form caffeine, with its tendency to produce wakefulness suggests itself, but it has not been successful. Doyle and Daniels have strongly advocated ephedrine. The use of this drug was suggested by the hypothesis that the cataplectic seizures might be due to the inability of the suprarenals to deliver sufficient adrenalin quickly during periods of emotional stress. It is known that sleeplessness sometimes follows the administration of ephedrine. It has been found also that ephedrine tends to abolish the narcotic effects of "Sodium Amytal" and that it is a much more valuable antidote to morphine than is caffeine. A dose of twenty-five milligrammes (three-eighths of a grain) may be given three times a day. This may be increased to fifty or even seventy-five milligrammes three times a day. This treatment is well worth further investigation. Other methods of treatment suggested have been by pituitary gland, thyreoid or thyroxin and even (with fatuous credulity) by pluriglandular preparations. In the absence of myxœdema or cretinism prolonged thyreoid medication is quite unwarranted. The treatment by barbitone or "Luminal" or opium to secure nightly sleep and wakefulness by day rather strains the imagination, even when daily wakefulness is sought by administration of caffeine. The habit-forming propensity of opium should interdict its use. Strychnine has been said to relieve the headache which sometimes precedes the sleep. It may well be of use in the cataplectic phenomena.

[1] *The Journal of the American Medical Association*, April 25, 1931.

Abstracts from Current Medical Literature.

GYNÆCOLOGY.

Treatment of Carcinoma of the Cervix.

E. ZWEIFEL (*American Journal of Obstetrics and Gynecology*, November, 1930) discussing the present status of treatment of carcinoma of the *cervix uteri*, states that opinions as to which method of treatment yields best results are more varied today than ever before. The methods available are: (i) surgical operation by the abdominal or vaginal route, (ii) irradiation by radium, X rays or the two combined, (iii) irradiation *plus* surgical operation as (*a*) surgical operation and post-operative prophylactic irradiation, (*b*) preoperative irradiation followed by operation, or (*c*) preoperative irradiation followed by operation and post-operative irradiation. He stresses the difficulty in comparing results owing to variations in methods of technique employed, in methods of statistical computation and the fact that patients with inoperable growths are referred directly to radiation departments. The introduction of radiation therapy has complicated the indications for treatment. It is possible that the diverse opinions held as to its value compared to surgery are due to the type of therapy and dosage employed. No two authors of the many who have reported the statistics of large series of cases have ever used the same technique. Radiation therapy still shows inadequacy of methods and technique. Proficiency in radiation is more difficult to achieve than surgical proficiency, as visual control is not possible. The γ rays emanating from X rays or radium can be made to destroy carcinoma cells. The superiority of radium is claimed by some, but this has not been settled. When radium has produced results following X ray failure, the improvement may be due to summation effect. The opposite experience has been reported. The fact that radium can frequently be placed in direct contact or in the substance of the tumour favours radium therapy. The author thinks that radiation therapy should always have a definite place in the plan of treatment, as it is certain that there is a definite improvement in results when surgical procedure is associated with post-operative prophylactic irradiation. The figures of many workers are quoted to substantiate this. Probably the carcinoma rests in the carcinomatous glands are disturbed in growth and function by the removal of the primary tumour or the connective tissue is stimulated in its struggle with the carcinomatous tissue hindering the growth of the residual tumour. Preoperative irradiation converts some inoperable into operable growths. The radium irradiation sterilizes the carcinoma; the bleeding and discharge stop. The resulting physical betterment of the patient decreases primary operative mortality. Also von Schmieden found that all carcinoma cells become definitely inactivated by irradiation. These factors make radium the method of choice in all inoperable cases. Stoeckel's routine begins with preoperative radium therapy followed by radical surgical operation by the vaginal route and finally post-operative X ray therapy. The method is too new to be accurately and finally judged. The great advantage of irradiation therapy alone, is that there is practically no primary mortality. Surgical operation has a minimum primary mortality of 5% to 10%. The public must be educated to the fact that cancer is curable, but success depends on early diagnosis. Summing up, the author gives the absolute percentage of cures (German workers) by radical abdominal operation 20%, radical vaginal operation 17%, and irradiation therapy only 17·7%. He thinks the combination of irradiation and operation produces better results than operation alone. Whether this should be combined as preoperative, post-operative or pre- and post-operative irradiation, it is at present impossible to determine.

The Zondek-Aschheim Reaction.

W. BÜNGELER AND K. EHRHARDT (*Klinische Wochenschrift*, March 28, 1931) describe the various reactions which occur when preparations of the anterior lobe of the pituitary gland are injected into sexually immature mice. Three grades of reaction are described. Reaction I is associated with the onset of œstrus as noted by the enlargement of the uterus and the typical cells found in vaginal smears. It is noted in the blood and urine of patients with disturbed endocrine function, in cases of tumour formation, both innocent and malignant, and in cases of menstrual irregularities. Reaction II comprises the presence of hæmatomata of the ovarian follicles, and Reaction III the formation of *corpora lutea*. Reactions II and III are alone characteristic of the blood and urine of pregnant women. It is not yet certain whether these reactions are caused by one or several hormones. From various experiments given in detail the authors are of opinion that the anterior lobe hormone acts on the uterus by first stimulating the ovary, which in its turn affects the growth of the uterus and produces the signs of œstrus in the vagina.

Endometrioma.

FERNANDO R. RUIZ AND ENRIQUE RONCORONI (*Revista Medica Latino-Americana*, March, 1931), operating on a patient of twenty-three years whose condition had been diagnosed as fibromyoma, found a tumour between the uterus and bladder which was an endometrioma. A subtotal hysterectomy was performed and another similar tumour was discovered in the uterus. The authors prefer wide surgical excision to radiation therapy. They recall two cases in which extirpation of the ovaries caused spontaneous disappearance of the growth. The endometrioma is highly invasive and surgical intervention often grave in character.

Age Period Changes in the Cervix Uteri.

NATHAN FREEDMAN (*American Journal of Obstetrics and Gynecology*, January, 1931) has undertaken the routine examination of 124 uterine cervices, twenty-four of which were obtained from autopsy and 100 after surgical operation. Of these seven were from females in the first decade, two from the second, 15 from the third, 49 from the fourth, 31 from the fifth, 13 from the sixth and seven from the seventh decade. The author's object was to obtain definite information as to the changes which occur in the cervix of the uterus at different periods of life. He found that there is a very considerable degree of change going on in the uterus at all times during the life of the individual. The squamous epithelium and the columnar epithelium manifest a considerable degree of interchangeability at all ages. They run into one another in such a way that at times it is most difficult to distinguish the actual line of demarcation. The lacerations that occur at labour would appear to be a very constant cause of endocervicitis. This is of great significance, because of the changes in the columnar lining and excessive downgrowth of thickening of the squamous epithelium. In many of these conditions of remodelling after laceration there is a precancerous condition of the epithelium. He suggests the revival of the term "carcinoid" which was suggested by Borst for these conditions. In old age there is a regression of the epithelium which in many cases is probably a "precancerous" or "carcinoid" condition. The author strongly urges early and thorough repair of all cervical lacerations as a means of prevention of the development of cancer in the cervix.

Leucorrhœa.

L. ADLER (*Wiener Medizinische Wochenschrift*, September 27, 1930) discusses the ætiology and treatment of leucorrhœa. After giving a description of the normal secretions, he states that the first step is to determine the anatomical site of the discharge and next to ascertain whether it is inflammatory or otherwise. Every discharge is not due to the gonococcus. Vulvovaginitis may be due to some local cause, but more frequently the lesion is situated at a higher level, especially in the vagina. Vaginitis is usually of an inflammatory origin—gonorrhœal or traumatic. An endogenous origin is more frequent than often suspected—hypoplasia of the genitalia and ovarian dysfunction. In the treatment of both types he prefers vaginal douches of one in 2,000 oxycyanide of mercury solution followed by painting the surfaces with 2% solution of silver nitrate. For trichomonas infection good results follow douches of

one in 1,000 corrosive sublimate followed by 10% boroglycerine. The cervix is the source of infection in the majority of cases and the use of the cautery is more certain than local applications. When the discharge comes from the uterine cavity, the possibility of carcinoma, especially in elderly women, must always be considered and excluded.

OBSTETRICS.

Resection of Coccyx During Labour.

A. NIEDERMEYER (*Monatsschrift für Geburtshülfe und Gynäkologie*, October, 1930) discusses the indications for resection of the coccyx during labour when the ankylosed coccyx forms a definite hindrance to delivery. The literature of the subject is rather scanty and the author describes a case in detail. The patient was a *primipara* with normal pelvic measurements and fixation of the head at the onset of labour. Delay occurred in the second stage and was due to the coccyx being ankylosed in a forward direction. It was removed by an open operation followed by closure of the incision. Forceps were applied to an occipito-posterior presentation and a living child extracted. The ætiology is discussed in detail and injury and rickets are mentioned as the principal causes. Trouble is also met with in funnel pelves. In some cases the bone may be severed subcutaneously, as is done in the operation of pubiotomy.

Aniline Poisoning in the New-Born.

A. WEINBERG (*American Journal of Obstetrics and Gynecology*, January, 1931) reports on the outbreak of aniline poisoning in thirteen infants. A ward was issued with a supply of clothing freshly marked "Ward 18 K.C.H." This was supplied at 7 a.m. and by noon practically every child in the ward had some of the clothing in contact with the skin, and by six o'clock thirteen babies showed signs of cyanosis, especially in the lips and mucous membrane; they had rapid pulse rates, increased respirations and cold extremities, and they looked like blue coloured wax dolls. They manifested marked anorexia and apathy. Dye stains were found on the skin of the affected children. Treatment was by removal of the clothes, washing away the stains with alcohol and ether and the administration of oxygen and carbon dioxide mixture. All the children recovered. Prophylaxis is by boiling all freshly marked linen.

The Damaged Heart in Pregnancy.

LOUISE MCILROY AND OLIVE RENDEL (*The Journal of Obstetrics and Gynæcology of the British Empire*, Spring Number, 1931) discuss their investigation of two hundred patients with organic heart disease complicated by pregnancy. For purposes of this investigation the patients were divided into three classes: I, patients with organic heart disease able to carry on ordinary physical activity without discomfort; II, patients with organic heart disease unable to carry out ordinary physical activity, (*a*) slight or (*b*) greatly limited; III, patients with organic heart disease with symptoms or signs of heart failure when at rest. *Multiparæ* showed an enormous relative increase in Class II (*b*), emphasizing the fact that multiple pregnancies tend towards permanent lowering of the cardiac efficiency. The actual anatomical lesion appears to have very little effect on the prognosis. Owing to the displacement of the heart in the later months of pregnancy, enlargement is difficult to determine, except by X rays. Chronic valvular disease was found in one hundred and sixty-seven, 131 had mitral stenosis. There were six cases of congenital heart disease and 27 cases of myocardial conditions. In reviewing the results as a whole patients of Classes I and II (*a*) do well as a rule and have normal pregnancies and labours. Patients in Classes II (*b*) and III need very careful watching and as a rule prolonged rest in hospital. Induction was performed before the twentieth week in six cases owing to the severity of the lesions with early signs of decompensation and unsatisfactory previous history. Labour was induced in two patients at twenty-eight weeks and twenty-six weeks respectively for failing compensation not yielding to treatment. Eight patients had spontaneous premature labour. Cæsarean section with sterilization was performed in four cases for cardiac failure, in one at eight months. Five patients died as the result of cardiac injury in this series of 200 unselected patients with cardiac disease, a death rate of 2·5%. The total general mortality rate for the obstetrical unit at The Royal Free Hospital, where this investigation was carried out, is 2·7‰. The authors consider that the prognosis must be considered from two aspects: the immediate prognosis and the ultimate prognosis. Heart disease does not contraindicate marriage. It is the question of pregnancy which calls for careful thought. If the heart response to effort is good, and enlargement is not present, and if the myocardium does not show any sign of degeneration, it is considered safe to allow pregnancy. If doubt exists, the authors are of the opinion that it is wiser to permit pregnancy. Pregnancy should be forbidden if there is a history of breakdown, especially if at all recent or if the myocardium is severely damaged. The renal efficiency is most important in these patients. In women of the hospital class household work must be considered. A future addition of children to the family may entail a strain which is actually greater than pregnancy itself.

Induction of Labour.

D. DÜCKELMANN (*Wiener Medizinische Wochenschrift*, April 11, 1931) reviews his results with the induction of labour following the administration of castor oil, quinine and pituitary extract. The technique employed was to give an ounce of oil followed by the pituitary extract an hour later, thymophysin at two hours and a further dose of pituitary extract two hours subsequently. The last two injections are omitted if labour has begun. He found that with *primiparæ* success is obtained only if the patient is at term. With *multiparæ* in the first nine months no success was noted, even after repeated injections. From the thirty-sixth week successful results were obtained only when the injections were combined with digital separation of the membranes around the internal *os*. In his cases 60% success followed this procedure. A greater percentage of successes occurred when the membranes ruptured prematurely or if labour were imminent.

The Prognosis of Puerperal Sepsis.

H. SCHULTEN (*Deutsche Medizinische Wochenschrift*, March 27, 1931) reviews the cases of puerperal sepsis in Schottmüller's clinic at Hamburg. Septic endocarditis is generally caused by aerobic streptococci and staphylococci which are easily obtained on blood culture. The prognosis is bad and death ensues within two weeks. Cardiac bruits are generally absent, and the diagnosis is made from the metastatic abscesses, especially in the joints. Acute thrombophlebitis has also a bad prognosis and in the absence of rigors may be mistaken for septic endocarditis. This is especially noted when the ovarian vein alone is involved and no palpable swelling can be detected. Anaerobic streptococci and staphylococci are the main causes of subacute and chronic thrombophlebitis. The temperature is characteristic and a tender mass can be palpated in one or both fornices. The prognosis is slightly better and from 10% to 20% of patients recover. The onset of general peritonitis generally means a fatal termination. Parametrial lymphangitis is due to hæmolytic streptococcal infection. Blood culture often yields no growth or but few organisms. These may also be found in the urine. The infiltration may be unilateral or bilateral and the fever is continuous and of moderate severity. At least half the patients will recover, and the greatest dangers are secondary rupture of abscesses into the peritoneal cavity or metastatic spread to joints. Infection with the gas bacillus is noted, especially with cases of septic abortion, and the prognosis is bad. *Bacillus coli* infection may be observed and the prognosis is good, as the infection tends to be localized to the uterus. If the urinary tract be involved cystopyelitis is noticed. Endometritis due to *Bacillus coli* infection is associated with a high and irregular temperature and *herpes labialis*. All forms may be combined or a mixed infection superimposed, which adds to the gravity of the condition. The author advises careful vaginal examination at once in all cases of *post partum* fever combined with bacteriological examination of the cervical and uterine contents as well as blood cultures.

Special Articles on Diagnosis.

(Contributed by Request.)

LVI.

MENTAL DEFICIENCY.

THE diagnosis of mental deficiency involves not only the recognition of the grosser forms, idiocy and imbecility, often associated with well marked physical stigmata, but also of minor degrees of defect which may, nevertheless, be important factors in the failure to make a satisfactory social adjustment. A practical definition of mental deficiency has been formulated by the English Mental Deficiency Committee as "a condition of incomplete development of mind of such degree or kind as to render the individual incapable of adjusting himself to his social environment in a reasonably efficient and harmonious manner and to necessitate external care, supervision and control." [1]

By the English *Mental Deficiency Act* of 1927 the definitions of the Act of 1913 were amended so as to include cases of arrested development occurring not only at "birth or at an early age," but up to the age of eighteen years, that is, at any time within the physiological period of brain development.

Idiots are "persons in whose case there exists mental defectiveness of such a degree that they are unable to guard themselves against common physical dangers." Such individuals can hardly be trained to feed or dress themselves or to be clean in habits, and they remain entirely dependent on others for their elementary needs. Their mental age does not rise above that of the average child of three years.

Imbeciles are "persons in whose case there exists mental defectiveness which, though not amounting to idiocy, is yet so pronounced that they are incapable of managing themselves and their affairs, or, in the case of children, of being taught to do so." Imbeciles are incapable of the wider adjustments necessary for independent existence and maintenance. They are able to learn the letters of the alphabet and perhaps to read and write a few simple words. Their speech comprises a few elementary words sometimes expressed in a simple sentence. They may carry out, but only under supervision, such routine tasks as washing and scrubbing, fetching or carrying, but not work of any economic value. The mental age does not rise above that of the average child of seven years.

Feeble-minded are "persons in whose case there exists mental defectiveness which, though not amounting to imbecility, is yet so pronounced, that they require care, supervision and control for their own protection, or for the protection of others, or, in the case of children, that they appear to be permanently incapable by reason of such defectiveness of receiving proper benefit from the instruction in ordinary schools."

Although the details vary somewhat in different cases, a consideration of the following data will enable a general estimation to be made of the child's development. Failure in several particulars may be taken as indicating mental retardation or defect.

In the first week the sucking reflex is active. The child distinguishes between sweet and bitter. The average cranial circumference is over 32·5 centimetres (thirteen inches).

In the first month it reacts to loud sounds. The eyes follow bright light in a darkened room. (Failure by the end of the second month is due either to blindness or to mental deficiency.)

In the third month the child holds its head erect when lying prone and turns its head towards loud noises. It is attracted by the tick of a watch (failure due to deafness or deficiency). It may hold out its hands towards objects. It displays interest in its own movements.

In the fourth month the child seizes and grasps objects. It can roll from side to side. It coos, smiles and laughs.

In the sixth month the child may recognize a few objects. It recognizes voices of parents or nurse. It uses the thumb in grasping objects. It carries objects to its mouth. It plays with the rattle. It can roll from back to front and *vice versa*. It begins to sit erect and to creep along the floor. It understands simple prohibitions. The average cranial circumference is over forty centimetres (sixteen inches).

In the ninth month the child sits up without support. It attempts to stand and makes stepping movements. It manipulates spoon and saucer. It attempts to form and imitate sounds vocally.

At one year the child is able to stand unsupported. It attempts to walk, but needs assistance. The eyes accommodate well. The child says a very few words, such as "ma-ma" and "da-da." It imitates simple movements and gestures. It scribbles with a pencil. It cooperates in dressing. It may hold the cup and use a spoon with very fair coordination. The average cranial circumference is over 42·5 centimetres (seventeen inches). Six teeth should have erupted by the end of the first year.

At eighteen months the child can run about and attempts to climb. It may point to nose, eyes, hair. It attains control over the bowels. Twelve teeth should have appeared.

At two years the child says sentences of two or three words. It may have a vocabulary of more than two hundred words. It names objects, such as key, watch, spoon. It may point out objects in a picture. It carries out simple instructions, such as "bring ball here." It can play at catching ball. It displays some constructiveness with blocks. It attains control over the bladder. Cranial circumference is over 45 centimetres (eighteen inches). The child should have sixteen teeth by the end of the second year. Failure of the fontanelles to close by this time may result from cretinism, hydrocephalus or rickets.

From the third year onwards standardized tests should be applied.

Intelligence Tests.

The following scale of intelligence tests is based on the Binet-Simon system.

Ages 1 and 2.

1. Eyes follow light.
2. Grasps and handles objects.
3. Chooses sweet and not block of wood.
4. Unwraps paper before eating sweet.
5. Imitates simple arm movements.

Age 3.

1. Points to nose, eyes and mouth.
2. Knows own sex.
3. Names knife, key, penny.
4. Gives name and surname.
5. Enumerates at least three objects in two out of three pictures.

Age 4.

1. Repeats sentence of from six to eight syllables. "I am cold and hungry," "The dog runs after the cat," "In summer the sun is hot." The child should be able to repeat one of the three sentences without mistake. Each sentence should be read out once only.
2. Repeats three digits (one of three trials should be correct): 6, 4, 1; 3, 5, 2; 8, 3, 7.
3. Counts four pennies.
4. States which is the longer of two parallel lines, five centimetres and six centimetres.
5. Says which is the prettier of three pairs of ugly and pretty faces on a test card.

Age 5.

1. Copies a square; should make two satisfactory copies out of three trials; the corners must have right angles.
2. Carries out a triple order: "Put this key on that chair, open the door, then bring that box."
3. Repeats a sentence of twelve syllables, one correct after one hearing: "The boy's name is John. He is a very good boy." "When the train passes you will hear the whistle blow." "We are going to have a good time in the country."

4. Gives sensible answers to two out of the three questions: "What should you do if you are (*a*) sleepy, (*b*) cold, (*c*) hungry?"

5. Repeats four digits (one of the three trials must be correct): 4, 7, 3, 9; 2, 8, 5, 4; 7, 2, 6, 1.

Age 6.

1. Counts thirteen pennies, placed anyhow.

2. Copies a diamond (plain outline, 7 × 3·5 centimetres). Two satisfactory copies out of three attempts.

3. Names four coins, 1s., 6d., 1d., ½d. (shown separately).

4. Repeats five digits (one out of three trials to be correct): 5, 2, 9, 3, 7; 6, 3, 8, 5, 2; 9, 7, 3, 1, 8.

5. Distinguishes right and left: "Which is your (*a*) right hand, (*b*) left eye, (*c*) right ear?"

Age 7.

1. Recognizes missing features in a test card.

2. Answers two out of the three questions: "What should you do (*a*) if it is raining when you are starting for school; (*b*) if you find that your house is on fire; (*c*) if you are going somewhere and miss your train?"

3. Repeats three digits backwards (one out of three correct): 2, 8, 3; 4, 2, 7; 5, 9, 6.

4. Adds three pennies and three halfpence placed before him.

5. States difference between (*a*) fly and butterfly, (*b*) wood and glass, (*c*) egg and stone. One out of three correct. Alternatives: (*a*) Ties a bow knot, (*b*) names the days of the week and also states what day comes before Tuesday, Thursday, Saturday.

Age 8.

1. Answers questions (two out of three): "What should you do (*a*) when you have broken something which belongs to someone else; (*b*) when you are on your way to school and notice that you are in danger of being late; (*c*) if a playmate hits you without meaning to do it?"

2. Counts backwards from 20 to 1 with not more than one mistake. If the child does not understand the question, give a lead by saying "20, 19, 18 . . . ."

3. Gives similarities between not less than two pairs: "In what way are wood and coal alike? Apple and peach? Iron and silver? Ship and motor car?"

4. Gives definitions of two of the following: Balloon, tiger, football, soldier. The definitions must not just be according to use, but include such qualities as appearance, substance or class.

5. Gives date. Error of three days in the day of the month allowed.

Age 9.

1. The child is shown a circle of about two inches' diameter, with the circumference broken at one point. Say to the child: "This is a round field in which there is a ball hidden somewhere. Start at the gate here and show me how you would look through the field to find the ball." The child should display some ability to plan. Specimens of successes and failures are given in the packet of tests.

2. Repeats six digits (once out of two trials): 3, 7, 4, 8, 5, 9; 5, 2, 1, 7, 4, 6.

3. Repeats four digits backwards (one out of three tests): 6, 5, 2, 8; 4, 9, 3, 7; 3, 6, 2, 9.

4. Names six coins: ½d., 1d., 3d., 6d., 1s., 2s.

5. Gives three easy rhymes to not less than two of the following words: Day, mill, spring. Say "You know what a rhyme is. Now give me three words that rhyme with . . ."

Age 10.

1. Names the months with not more than one omission and gives the month before April, July, November (two out of three).

2. Makes a sentence with three words included, but not more than two coordinate clauses: Boy, river, ball; work, money, men; desert, rivers, lakes. Should do two out of three satisfactorily.

3. Arranges five weights (equal size and appearance) in order: 3, 6, 9, 12 and 15 grammes. Two out of three trials must be correct.

4. Draws two designs from memory. One must be correct, the other may be only partially completed.

5. Defines fifteen of the following words, presented in order: Gown, tap, scorch, puddle, envelope, rule, health, eyelash, copper, curse, pork, outward, southern, lecture, dungeon, skill, ramble, civil, insure, nerve, juggler, regard, stave, brunette, hysterics. Alternative: Reads aloud the following passage with only two mistakes and recalls eight items: "Manchester, September 5th.—A fire last night burned three houses near the centre of the city. It took some time to put it out. The loss was five thousand pounds, and seventeen families lost their homes. In saving a girl who was asleep in bed a fireman was burned on the hands."

Age 11.

1. Detects absurdities in three out of five of the following:

(*a*) A man said: "I know a road from my house to the town, which is down hill all the way to the town and downhill all the way back home."

(*b*) An engine driver said that the more carriages he had on his train the faster he could go.

(*c*) Yesterday the police found the body of a girl cut into eighteen pieces. They believe that she killed herself.

(*d*) There was a railway accident yesterday, but it was not very serious. Only 48 people were killed.

(*e*) A bicycle rider, being thrown from his bicycle in an accident, struck his head against a stone and was instantly killed. They picked him up and carried him to the hospital, and they do not think he will get well again.

2. Gives reasonable answers to two out of three questions:

(*a*) What ought you to say when someone asks your opinion about a person you don't know very well?

(*b*) What ought you to do before beginning something very important?

(*c*) Why should we judge a person more by his actions than by his words?

3. Gives sixty different words in three minutes.

4. Repeats one of the following sentences, without error, or two sentences with one error in each:

(*a*) The apple tree makes a cool, pleasant shade on the ground where the children are playing.

(*b*) It is nearly half past one o'clock; the house is very quiet, and the cat has gone to sleep.

(*c*) In summer the days are very warm and fine; in winter it snows and I am cold.

5. Repeats five digits backwards (one test out of three correct): 3, 1, 8, 7, 9; 6, 9, 4, 8, 2; 5, 2, 9, 6, 1.

Age 12.

1. Gives the points of similarity between the three objects in three out of the five following sets: "In what ways are . . . . alike?" (*a*) Snake, cow, sparrow; (*b*) book, teacher, newspaper; (*c*) wool, cotton, leather; (*d*) knife-blade, penny, piece of wire; (*e*) rose, potato, tree.

2. Gives definitions of twenty words. See list for year 10, number 5.

3. Ball and field test, superior plan according to types on test card.

4. Rearranges mixed sentences (one minute each, two out of three correct): (*a*) For the started an we country early at hour. (*b*) To asked paper my teacher correct I my. (*c*) A defends dog good his bravely master.

5. Interpretation of three out of four test pictures.

These tests should be applied systematically and as far as possible under "laboratory" conditions. The child should be completely at ease and the surroundings should be free from distracting stimuli. It is desirable that the examiner and the child should be in a room alone; parents should always be excluded. A standardized technique has been evolved governing the ways in which the various questions should be asked and the types of answers which may be accepted or rejected. For the exact application of the Binet scale reference should be made to "The Measurement of the Intelligence," by Terman. The packet of test cards may be obtained from educational booksellers. The

tests given above, with alternatives in some instances should the special test cards not be available, will enable an approximate estimation of the mental age to be made. It is desirable to begin with a year well within the child's ability, thereupon to work upwards until no more test questions are answered satisfactorily. Each test performed correctly scores 0·2 of a mental year. The calculation of the mental age may be seen from the following example:

Year 7, all answers correct	7·0 years
Year 8, numbers 1, 3, 4 correct ..	0·6 year
Year 9, numbers 1 and 5 correct ..	0·4 year
Year 10, 2 correct	0·2 year
Year 11, none correct	0·0
	8·2 years

The mental age is thus just over eight years. The intelligence quotient (I.Q.) is the ratio of the mental to the physical age. Suppose the child tested above was twelve years old, the intelligence quotient would be $^{8}/_{12}$ = 0·6, while with a physical age of seven years it would be 1·1.

The full Binet-Simon scale runs up to eighteen years (superior adult), fourteen years being taken as the average adult mental age. The complete scale has not been included in this article, since the estimation of mental ages above twelve demands a more searching and exact determination of abilities than is called for below that level. The tests are most commonly used during the school age, and in practice it is usually of more value to ascertain whether the mental age is up to the level of twelve years than to determine ratios nearer the average. This article is not intended for educational and psychological specialists who have at their disposal tests for special abilities, linguistic, mathematical, mechanical *et cetera* and for the estimation of intelligence in the blind and deaf, but to help the general practitioner to ascertain such degrees of mental deficiency as may play an important part in the failure of the individual to maintain average progress at school or to attain average independence and social efficiency in later years.

With regard to moral defects, the failure to appreciate the desirability of complying with laws and conventions, it may be pointed out that legal provision has been made in England for the special class of moral defectives, defined as "persons in whose case there exists mental defectiveness coupled with strongly vicious or criminal propensities, and who require care, supervision, and control for the protection of others." In this class the intellectual failure is not such as would render the individual certifiable as "feeble-minded." The defect is more of the nature of a lack of control over emotional impulsive mechanisms, in some cases apparently innate or constitutional, in others a sequel of head injury or infection of the central nervous system (for example, post-encephalitic character changes). In the absence of any special legal enactments the "dull normal" with a mental age of twelve or thirteen years usually has to pay the full penalty for his crimes, while below that mental level punishment may be mitigated or administered with modification. Dull and defective prisoners often constitute a special problem in the administration of penal institutions.

As in all laboratory methods, the ascertainment of the mental age often provides valuable information, but the information must be interpreted in the light of clinical observation. The late Walter E. Fernald, of the Waverley Institution, Massachusetts, combated the tendency to look no further than the Binet-Simon test in the diagnosis of mental deficiency by introducing his famous ten-point scale. He insisted that no study of a defective, especially of the milder grades, was complete without a consideration of the following points: (i) Physical examination, (ii) family history, (iii) personal and developmental history, (iv) school progress, (v) examination in school work, (vi) practical knowledge and general information, (vii) social history and reactions, (viii) economic reactions, (ix) moral reactions, (x) mental examination.

The obtaining of a careful and detailed history is more important than a multitude of psychological tests. The child is indeed father of the man. In dealing with the defective over school age the history of the social and economic reactions, and assessment of temperamental and moral reactions should receive full attention.

Some Special Varieties of Amentia.

Mongolism may be recognized at birth or during the first few weeks. In general, the more pronounced the physical abnormality, the greater the mental defect, usually amounting to imbecility. Mongoloids with slight stigmata may attain the standard of feeble-mindedness. The physical appearance of the mongolian idiot is sufficiently striking to attract notice from birth. The tongue is constantly protruded and in course of time becomes fissured and undergoes hypertrophy of the circumvallate papillæ. Other features include the oblique set of the palpebral fissures, the short hands and feet, with simple palmar markings and stunted stature. The peculiar vivacity of these aments, which is such a pleasing quality in later years, may be displayed early in life. A few mongols, however, are dull and apathetic in infancy.

Cretinism is seldom recognized before the age of five or six months. The infant is dull and lethargic and fails to maintain average physical and mental development. The coarse, dry, wrinkled skin usually attracts notice first of all. The tongue may be constantly protruded as in mongolism, but does not hypertrophy. The diagnosis between cretinism and mongolism is not always easy in the first few weeks and, since the early administration of thyreoid extract is most important in the former case, it is therefore wise to suspend judgement and apply the therapeutic test.

Microcephaly may be expected when the circumference of the skull is considerably below the average for the particular age. In well marked cases the forehead recedes and the occiput is flattened, while the features are small, with a beak-like nose. Microcephaly is scarcely a definite entity, since the majority of aments have a cranial circumference and cranial capacity below the average. As in other forms of amentia, there is a fair correlation between the prominence of physical stigmata and anomalies and the degree of mental deficiency.

Oxycephaly (steeplehead) is named from the conical formation of the vertex. Poorly developed orbital ridges and frontal eminences and prominent eyes are other features of this condition. X ray examination reveals curious markings in the skull bones somewhat resembling the impressions of the fingers (see the case described by Ewen in this journal on April 5, 1930, at page 444). Some of these cases may be recognized without difficulty at birth, while in others the deformities develop or become accentuated up to the fourth or fifth year. The mental deficiency usually amounts to idiocy.

Tuberous sclerosis, in which there is an overgrowth of interstitial tissue in the brain, may give rise to a considerable increase in the size of the head. Fits and paralyses occur in severe cases and the mental impairment may be considerable. The hypertrophy of interstitial tissue may occur in the internal organs, also in the skin, where it gives rise to the remarkable condition of *adenoma sebaceum*, appearing first at about the fifth year in the naso-labial folds and later spreading over the cheeks. It is well to inquire regarding mental deficiency in persons with this skin condition, even though the cranium may not be enlarged.

Cerebral degeneration occurs in early years in a few children who have apparently been normal at birth. Amaurotic family idiocy displays its distinctive features after about the third month and the peculiar retinal change, the cherry-red spot, may be seen some time after the onset of general muscular weakness and failing vision. Late forms have been described with onset during the third or fourth year, or during adolescence. The constant signs are progressive muscular, visual and mental failure. There is another rare condition which begins with failure of vision and is followed by muscular weakness and spasticity and mental deterioration, namely, Schilder's *encephalitis periaxialis diffusa*. Onset may be deferred until childhood or adolescence.

Secondary types of amentia do not call for any detailed description. It is sufficient to note that the more pronounced the physical sequelæ of trauma and infection in early years, the greater the probability of destruction or arrested development of neurones in the highest cortical centres. Impaired contact with the environment resulting from deafness or blindness, is, of course, a hindrance to mental development, but it is unfair to presume mental deficiency in those who are blind or deaf from early years without careful examination, including the application of special mental tests and attempts at special education. Hydrocephalics vary in the degree of mental defect. Most are imbeciles. Parents are often anxious about the mental prognosis of a child with severe malnutrition. Many aments are undersized and undernourished at birth, and in these hereditary or dysgenic factors may often be ascertained. Opinion regarding prognosis should be suspended until the reaction to adequate feeding has been observed. Malnutrition occurring later from faulty rearing, in the absence of disease such as syphilis or of physical stigmata, even though it causes a retardation in mental development, is not usually followed by permanent defect, provided that the nutrition improves under a proper *régime*. Similar principles are applicable to rickets, which does not of itself cause any more than slight delay in mental development.

Regarding congenital syphilis it may be said that cases with well marked syphilitic stigmata and with signs of gross lesions of the nervous system are more likely to have a severe degree of mental deficiency. Institutions for the mentally deficient may have from 10% to 15% of aments with a positive serology, most of whom have fits, paralyses, and other severe physical disturbances. Congenital syphilitics, especially if treated, may grow up with average mentality or with a minor degree of subnormality. Juvenile paresis develops during adolescence in children who have previously appeared healthy, as well as in those already diagnosed as congenital syphilitics. Increasing mental dulness progressing to definite mental reduction may by several weeks or months precede the manifestation of typical neurological signs, including fits and transient paralyses. Occasionally a psychosis of a schizophrenic symptomatology heralds the onset. Juvenile paresis should therefore be considered amongst the causes of failure in scholastic or economic efficiency arising between the ages of ten and twenty.

Epidemic encephalitis up to the end of adolescence is often followed by profound changes in character without the physical sequelæ which commonly occur in the adult. Emotional instability, restlessness and inability to sustain the attention may prevent any further educational advance. Other children exhibit a mental lethargy or bradyphrenia like that of adult Parkinsonism and may achieve an average score in the Binet-Simon tests, provided that time factors are not taken into consideration (for example, tests for year 8, number 2, and year 11, number 3). Others undergo a general deterioration of the intellectual faculties and remain two or more years below the average in their mental performance. The antisocial, "*apache*" and amoral types of young post-encephalitics usually display some general mental deficiency as well as loss of control over the lower emotional and impulsive mechanisms.

Fits occurring in infancy, if repeated and severe, and especially if associated with stigmata and evidence of gross cerebral lesions, are certain to lead at least to imbecility, if not to idiocy. It should be remembered that epileptics, even though they have made good educational progress and preserve at least average intellect, are liable to develop temperamental anomalies sufficiently great to constitute a severe handicap.

Mental Deficiency and Acquired or Superadded Mental Abnormalities.

Occasionally, through the lack of an adequate history, the diagnosis between mental deficiency and certain psychoses may present some difficulty. The onset of *dementia præcox* often takes the form of an increasing mental dulness, with loss of initiative and emotional apathy. Examinations of the mental state and of the reaction to psychological tests may do no more than indicate mental subnormality, so that mental deficiency may be diagnosed. On the other hand, such cases will have a history of a gradual change in disposition and failure of efficiency (see "Diagnosis of Psychoses in the Early Stages," THE MEDICAL JOURNAL OF AUSTRALIA, December 27, 1930, page 856). It must be remembered that many cases of *dementia præcox* present a background of intellectual or temperamental subnormality. The development of schizoid symptoms during adolescence may be observed not infrequently in defectives in institutions. The diagnosis between innate and acquired (progressive) mental dulness has, of course, important bearings on prognosis and treatment.

Paranoid States. Just as a mental defective may develop an additional defect or dementia, so he may display other mental symptoms, confusion, excitement, depression *et cetera*. Defectives of all grades are apt to make unguarded accusations and to be suspicious and distrustful. All kinds of absurd statements may be made by such individuals, especially during the emotional upset following some domestic or occupational crisis, and may lead to commitment to a mental hospital. Yet the prognosis as regards further paranoid developments may not be unfavourable, and with the adjustment of the situational difficulty and after a suitable period of institutional discipline the patient becomes fit to regain his liberty.

Malingering. Stupidity may be feigned before trial, or for the sake of evading military service or for purposes of compensation. The malingerer is apt to overact his part and to behave normally when his vigilance is relaxed. The history is, of course, of great importance.

Educational Retardation.

Certain factors other than general mental deficiency may cause the child to lag a year or two behind the average in educational progress. In some of these cases there is a certain degree of intellectual deficiency, so that little progress is made at school after the age of ten or twelve years, but the possession of such qualities as self-assurance and social adaptability insures a satisfactory future. Other children have special disabilities, such as poor memory, subnormal auditory or visual imagery or other defects which hinder progress with the "three R's," but which may be offset by practical aptitudes. Certain physical handicaps should be remembered, including malnutrition, rheumatism, chorea, rickets, epilepsy, tonsils and adenoids, defective vision, hearing and speech, and an uneasy adolescence. Environmental and social handicaps include poverty (insufficient food, clothing and sleep), overwork outside school, and unsettled or inharmonious home conditions.

Reference.

[1] "Report of the Mental Deficiency Committee," His Majesty's Stationery Office, 1929.

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British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Robert H. Todd Assembly Hall, B.M.A. House, 135, Macquarie Street, Sydney, on May 28, 1931, DR. GEORGE BELL, the President, in the chair.

The President welcomed His Honour Judge Perdriau, of the Workers' Compensation Commission.

Medico-Legal Difficulties Following Bone and Joint Injuries.

DR. R. M. MACKAY read a paper entitled: "Medico-Legal Difficulties Following Bone and Joint Injuries: The Legal Aspect" (see page 187).

DR. J. G. EDWARDS read a paper entitled: "Radiography and Medico-Legal Cases" (see page 194).

DR. LENNOX TEECE said that the discussion must obviously revolve round the *Workers' Compensation Act*; like every other Act, it was not perfect, but they had to take it as it stood. The medical practitioner had often to deal with honest patients who were anxious to get back to work as soon as possible and who had no object in endeavouring to deceive as to the continuance of their illness; but they also had to deal with rogues. There were, moreover, insurers who endeavoured to get the patient back to work while his disability was still obvious. Disputes were largely caused by misunderstanding. Medical men should try to determine whether in any direction the blame lay at their own door. Often they failed to give adequate information about the case in hand. Although in medical matters they were not prepared to allow the insurance companies to direct the treatment of the patient, they should let them know the salient features of each case. In fairness to the patient they should give accurate and detailed information of his condition. Otherwise the patient might be unjustly regarded as a malingerer. There were certain questions which the medical practitioner should ask himself and for which he should be able to find answers: Was the patient disabled? To what extent? Was the disability due to injury or to disease? Could it have been caused as described by the patient? What was likely to be the duration of the disability? Was it due to functional or organic disease? It took far more time to go through the case of a malingerer than to judge one of genuine injury and the medical man might fail to recognize the existence of malingering. For instance, the malingerer might be a man who, having a genuine wound, deliberately prevented it from healing. The doctor must be sure, too, that the injury was produced at the time that the patient declared. The possibilities of error were thus limitless and it behoved the medical man to exercise the maximum of care.

Many medical practitioners often rightly felt that they had not been fairly treated by the insurance companies, but Dr. Teece felt sure that many difficulties could be overcome if only further conferences were held with the medical officers of the companies.

In conclusion, Dr. Teece said that the final determination of the date when the disability ceased for various types of injury was of the greatest importance.

DR. C. E. CORLETTE said that they all realized that they were dealing with a difficult subject when they discussed medico-legal accidents or injuries. Human beings were curious creatures; they were not merely pieces of bone, and it was not a question of what a skiagram displayed. Human beings had a nervous system; they also had jobs and wives and families. The injured workers were their patients and often their friends, and it was hard to be unbiased. They did not always succeed. Not even a judge could be always unbiased, for he, like the rest of them, was a human being. Of course, this was only a platitude, but it was useful to remind themselves of the fact. When a medical practitioner came into court he was apt to forget that he was subject to the same weaknesses as other people. Compensation was not always an advantage. It was a blessing to some, but again, it was a curse to others and had ruined not a few. With the best of intentions, medical practitioners, by means of this Act, had helped to ruin many people. They remained permanent psychic wrecks.

Dr. Corlette went on to say that he was surprised at the worship of massage. Insurance companies had paid away hundreds of thousands of pounds which had gone up in the smoke of massage. Massage was often a means of allowing the patient to think that he was being treated when he was not. It also allowed the doctor to think he was treating the patient, whereas it was simply bondage to a formula. He was in entire agreement with Dr. Mackay in regard to active movement, but would go further and say that an ounce of active movement was worth a ton of massage. He would not, of course, say that massage was of no use at all. Occupational therapy stood on a different level. He thought it should be used a great deal more. There were people who specialized in this, and it was surprising what success they had in bringing patients back to usefulness.

Orthopædists were not always wise in some of the things that they did. A man with a pain in the back was unfortunate when he got into the hands of the orthopædists. He was put into an apparatus to keep his back or neck straight and then he was done for. His only hope was for the orthopædist to die or break his leg, and then someone else would take him out of the splint. By that time, however, he was a psychic wreck—he had received a mental injury. Dr. Corlette had seen many who had suffered in this way.

DR. JOHN STOREY said that he felt a kind of reflected glory as being the representative of the Surgical Section which had suggested that Dr. Mackay should be asked to read his paper. He asked Dr. Mackay in the first place what he meant when he referred to the amount that would be charged to the patient if he were not a "worker." Was this term used in its legal and not in its literal sense? A man might work and yet not be a "worker" under the Act. The fee collected would be nothing if he were merely a working man and not a "worker." In regard to the question of negligence, it was important that the practitioner in charge of a patient should welcome the suggestion of a consultation. A consultation protected the medical practitioner and the patient, and it certainly satisfied the patient's friends. Dr. Storey then went on to refer to the lust for operations. It was certain that this existed in some quarters. It would be good if no operation were ever undertaken without consultation, except in cases of extreme urgency. Some men undoubtedly operated only when an operation would benefit the patient; others again were not so careful. Dr. Storey illustrated his remarks in this regard with one or two clinical histories. As far as a clinical history was concerned, unless notes were actually written down when the patient was first examined they were worthless. Dr. Storey agreed that an ounce of active movement was worth a ton of massage, and added that hot air was hot air. Most medico-legal actions began because "some clever guy" shrugged his shoulders or winked at the wrong moment. The only thing to do was to do to the other fellow as you wanted him to do to you.

Dr. Storey went on to discuss head injuries and said that it was very difficult to sort out the patient with a genuine after-effect from one whose motive was compensation. The injury to the skull was not important; all-important, of course, was the damage to the cerebrum. He agreed with what Dr. Mackay said about jackets, and if he were older he would agree with Dr. Corlette. In regard to railway spine, this term was as dead as Julius Cæsar; the modern name was traumatic neurasthenia. He thought a better term would be "lead swinging" for monetary reward. The whole trouble was due to the writings of one English surgeon.

In conclusion Dr. Storey referred to the paper by Dr. Edwards. He thought that the latter gave the wrong answer in regard to the possibility of the X rays making a mistake. He thought that the proper reply would be: "No, but the interpreter, however expert he be, may do so." He had seen expert radiologists who had been absolutely wrong. Sometimes a report of fracture of the skull was made because a radiographer had made a report on the skiagram when it was wet.

DR. STRATFORD SHELDON said that he had a long experience of workers' compensation before this Act came into force. Medical men were now in a blessed state in comparison with the condition of affairs before the Act was passed. They now had a Workers' Compensation Commision ably presided over by Judge Perdriau and a medical assessor in Dr. Mackay. Prior to this, when cases were all heard before the District Court, the condition of affairs was appalling. The views put forward by Dr. Corlette on massage and also by Dr. Mackay had his partial support. He agreed that too much was expected of it, but it would take a long time to persuade him that an œdematous limb after fracture would not derive benefit from massage. Massage certainly helped greatly in getting rid of œdema and stretching and freeing adhesions resulting from extravasation in the soft tissues. Dr. Teece had made considerable reference to malingering; his (Dr. Sheldon's) opinion was

that true malingering was very rare. The claimants who were said to be malingering usually had decided disability, and it was a frequent experience to find them attributing the disability to something compensatable. There was much to be said for the injured workers; they were as a rule uneducated and accustomed to be always working, and when put off work their mental attitude was frequently altered as the result of injury. This alteration in their outlook was fomented and encouraged by lawyers, union secretaries, and not infrequently by lack of firmness by their medical attendants. An initial mistake was often made by adopting a wrong attitude. It was best to put into their minds the idea that they should return to work and to get to their usual environment. The claimant should be encouraged to return to work with partial pay. It would appear that sometimes there was a conspiracy between the employer and employee to get as much as possible out of the insurer.

Prior to this Act coming into force employers had been willing to take injured workers back and give them light work. This state of affairs was now almost confined to self-insurers. The greatest trouble at the present time was that injured claimants remained idle while capable of doing many kinds of work. No man should receive full compensation while capable of doing any light work.

DR. H. S. STACY complimented the readers of the papers. He supported Dr. Sheldon. Malingering was not common. He could not go back to the time before the Act when the symptoms of workers were similar to those manifested at the present time, when doctors were too apt to put everything down to a desire for more compensation. The weakest point was the fact that it was impossible for a worker to get back to light employment. If this difficulty could be surmounted many of their troubles would be overcome.

DR. E. B. M. VANCE congratulated Dr. Mackay especially on the human note in his paper and urged on medical practitioners to put into practice Dr. Mackay's advice to put themselves in the worker's place before they certified that he was able to begin work. He had to defend the orthopædic surgeons. Dr. Corlette was prone to be provoking. The orthopædic surgeon was always anxious to get the patient back to work as soon as possible. In regard to injury to the back, no one was better qualified than the orthopædic surgeon to determine whether an artificial support was necessary. He admitted that mistakes were sometimes made and said that it would be improper to imagine that no artificial support should ever be used.

DR. C. H. E. LAWES emphasized the fact that no light work was available for the manual labourer. He referred to one instance in which he had certified that a wharf labourer was fit for light work. He had found that the man was expected to lift heavy bags of potatoes and to put them on shelves. Dr. Lawes had withdrawn the certificate for light work and his decision had been upheld by a board to which the question was referred.

DR. J. S. PURDY referred to the need for an orthopædic centre in Sydney, such as existed in Birmingham. At such a centre occupational therapy could be used to shorten the time of absence from work.

Probably the insurance companies and the large employers of labour, such as the Railway Commissioners, the City Council, the Metropolitan Water, Sewerage and Drainage Board, and the Harbour Trust, who carried their own insurance, would be sufficiently interested to warrant them contributing.

As far as light work was concerned, the problem was difficult. In the Electricity Department of the City Council of Sydney, they had a safety officer who arranged for light work for men who were partly incapacitated. There was no such provision in the other departments, although he had been able to arrange for transfers from one department to another, and incidentally had found that a man who had his scaphoid removed and could not work as an electric mechanic, had made a first class patrolman, and another with an inoperable umbilical hernia a good ratcatcher.

There was, however, a limit to opportunities for light employment, and it was sometimes found that partly incapacitated men wished to choose their own employment, which made it extremely difficult to place them.

With experience of two military campaigns and eighteen years in the City Council, he could honestly say that cases of real malingering were rare, and in that regard he agreed with Dr. Sheldon. It was not uncommon, however, to find men not unwilling to extend their period of absence from work as long as possible.

Dr. Mackay, in reply, said that his paper had not been written in a spirit of unfriendly criticism. In the course of his duties he had seen many things that had placed medical practitioners in such a position that they were open to criticism. This should not occur. He thought that it was generally the inaccuracies in diagnosis that occurred through medical practitioners hurrying their examination of these cases which led later to controversy and argument in court. Dr. Storey had touched on the definition of a "worker." Before the passing of this Act these persons were treated in hospital and paid nothing. Now they had a certain status and a right to treatment; they had been recognized as members of the "industrial community." Some medical men had no trouble with the insurance companies; they looked on the worker as a member of the industrial community who could not pay a big fee. It was, of course, the worker who was responsible for the fee, although the insurance company paid it. He agreed with Dr. Sheldon that malingering was nowadays not common. If a diagnosis of malingering were made, it would be most unwise to describe a man in court as a malingerer, for it would immediately be necessary to prove the statement to be true.

Dr. Mackay referred to the provision of "light work" as a big question. The employers paid large sums to insurance companies to insure their liability to their employees; they often felt that they had paid a great deal and got nothing back. They then interested themselves on behalf of their employees and refused to take them back until they were quite fit for work. He thought that Section II of the Act was a wise provision in that it provided for reducing the amount payable to men who were able to do a certain amount of work. In conclusion, Dr. Mackay expressed approval of Dr. Purdy's suggestion, and said that occupational therapy would undoubtedly help to shorten the time of incapacity.

Dr. Edwards in his reply said that he did not think that fractures of the transverse processes were ever caused by direct violence.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Prince Alfred Hospital, Camperdown, on May 14, 1931. The meeting took the form of a series of demonstrations by the members of the honorary staff. The first portion of the report of this meeting was published in the issue of August 1, 1931.

Dural Endothelioma.

DR. H. R. G. POATE showed a woman, aged fifty-nine years, who was admitted to hospital on December 16, 1929, complaining of loss of power in the left hand over a period of four months. First there was loss of sensation, and she used to drop things, and later noticed loss of power. For the past month there has been twitching in the left hand and in this period she also began to drag the left leg and was very unsteady on her feet. For two months she had severe headaches, and in the last three weeks has been getting attacks of vomiting.

There was a definite double papilloedema. There was slight paresis of the left side of the face, and also paresis of the left arm and leg, with some spasticity in the left arm. The patient was able to flex the elbow, but below this level had no movement. There was slight spasticity of the left leg and all movements were weak. The sensation on the left side of the body was slightly impaired to light touch, while pain and temperature sensations showed definite impairment. Plantar reflexes were both extensor in type and both knee jerks were exaggerated. All tendon reflexes on the left side were increased.

On December 19, 1929, under intravenously injected "Sodium Amytal" and local infiltration, a large semicircular incision was made through the scalp with the Bovie knife in the right parietal region and an osteoplastic flap turned down. Upon opening the dura the brain bulged outwards and a definite mass could be felt beneath the cortex. An incision was made with the Bovie knife down to a tumour which was found one centimetre from the surface, was very dark in colour and appeared encapsuled. It was eventually enucleated, the cavity swabbed with formalin, the brain sutured, the dura replaced and the osteoplastic flap sutured.

The patient made an excellent recovery from the operation, and on December 30, 1929, had regained some movement in the left hand. On January 14, 1930, improvement had continued and she could control both arms and legs satisfactorily. On January 25, 1930, the patient was walking very well. Papillœdema had practically cleared up. On February 5, 1930, the patient was discharged apparently completely recovered.

The pathological report was that the ovoid tumour measured 3·3 centimetres in its longest diameter. The structure resembled that of a dural endothelioma. Six months later the patient reported as having completely recovered.

Dr. Poate pointed out that interest lay in the fact that the tumour was found one centimetre beneath the cortex, but the pathological report stated that its structure resembled that of a dural endothelioma.

Spongioblastoma.

Dr. Poate also showed a youth, aged eighteen years, who was admitted to hospital on May 10, 1930, with a history of pains in the head for the last week accompanied by vomiting. He had noticed some twitching of the left arm off and on during the last three years. Apart from this his general health was good and the twitching of the arm caused him no concern until two months before, when he had a fit in bed and the left arm was drawn up towards the shoulder. He was unaware of any movements in the face or lower limbs. He became unconscious for a short period, bit his tongue, but did not lose control of the sphincters; he soon recovered his usual health.

A fortnight before admission he complained of pains all over his head. These recurred a week later and remained continuous. He did not vomit until the day before admission to hospital.

His general condition on admission to hospital was one of lethargy. Sensation was impaired over all the left side of the body, especially the left forearm and hand, the left foot and leg. There was definite hyperæsthesia over the abdomen and the inner side of both thighs, also over the right leg and foot. Kinæsthesia was deficient in the left foot and leg, and there was definite dysmetria in both hands. Definite paresis was present in the left forearm and hand, and both optic discs showed definite papillœdema. Horizontal nystagmus to each side and slight vertical nystagmus were present. Slight impairment of sensation was present over the left side of the face, the tongue protruded slightly to the left, the palate appeared paretic on the left side. The plantar reflex was extensor on the left side. Wrist, elbow and supinator jerks were exaggerated on the left side. The specific gravity of the urine was 1·020, no albumin, sugar or acetone was present. Incontinence of urine developed the day after admission. On May 13, 1930, headache was very severe, incontinence of urine developed, and the patient became very drowsy. Lumbar puncture was performed and twenty cubic centimetres of fluid were removed under greatly increased pressure. On May 15, 1930, operation was performed under "Sodium Amytal," given intravenously, and local anæsthesia of the scalp. A large flap was outlined in the right parietal region and an osteoplastic flap was cut. As the patient was very restless, the dura was not opened and the flap was sutured. On May 17, 1930, the patient's left arm became rigid in semiflexion, the fourth and fifth fingers in complete flexion and the others semiflexed. There was jerking of the head, and the eyes turned to the right. The attack lasted about two minutes.

On May 20, 1930, under intratracheally administered ether anæsthesia, the osteoplastic flap was turned back. The dura, which was very tense, was incised and brain substance was felt to be cystic towards the mid-line. An exploratory needle was inserted and sixty cubic centimetres of dark fluid were withdrawn. An incision was made into this cavity, which seemed to be smooth walled, but upon investigation on its medial aspect a hard area was felt. An incision was made with a Bovie knife and an encapsuled tumour was found. This was enucleated readily. The cavity was swabbed with formalin and dried, brain tissue was sutured with catgut, the dura was replaced and the osteoplastic flap sutured in position.

The patient made an excellent recovery, and on May 24, 1930, his mental condition appeared normal and the papillœdema had definitely receded. On June 2, 1930, the paresis of the left hand had cleared and there was very little papillœdema remaining. He was discharged from hospital on June 6, 1930.

The pathological report showed the tumour to be a *spongioblastoma bipolare*. Three months after operation the patient was leading a normal life, back at work and was playing football. A letter dated May 11, 1931, stated that he was at work in the country and had been remarkably well ever since leaving hospital.

Dr. Poate's third patient was a man, fifty-three years of age, a fruiterer, who was admitted to hospital on March 23, 1931. He complained of headaches and fits for seven and a half years. These were increasing in severity. The family history was good. The patient was born in Scotland. He had lived in Canada for ten months and had come to Australia eight years ago. The patient denied having contracted venereal disease. He had four children, and his wife had had no miscarriages. The patient suffered from "typhoid fever" eighteen years ago, he had no other fevers and no operations.

The patient was quite well until seven and a half years ago. The first thing he noticed was that he fell down unconscious after lifting a case of fruit on to his lorry. He was put to bed and did not know for how long he was unconscious. He had not injured his head, but it was sore about the occipital region. He had had this pain in the back of his head continuously for the last seven and a half years. It was always the same and did not go away. He had fits at the rate of one or two per week; they were increasing in severity. In the milder fits the left eyebrow twitched and the left side of the mouth was drawn up. The back of the neck became stiff and sore and the head was jerked back. He twitched also in the left hand and left leg. The left leg was broken eight years ago and has been weaker than the right ever since. The patient said that he became unconscious and did not know what he did in the fits. In the last fit before admission he passed urine. He felt "fairly well" after a fit. His memory was very bad. He had difficulty in speaking. He became "blue" during a fit. He slept poorly. His appetite was good. His bowels acted regularly every day. He had no cough and no sputum. He had no urinary symptoms and had control of the bladder, except during a fit.

On examination at the time of admission the patient was a well nourished man of middle age with a florid complexion. He had drooping of the left side of the face. This caused a certain amount of difficulty in speaking and also rendered him more difficult to question. No arteriosclerotic vessels were noted in the temporal region. Temperature and pulse rate were normal. No œdema, no glandular enlargements and no cyanosis were present. He was mentally dull, his memory was poor, he was worried about his condition. He had twitching of the left side of the face, the left arm and left leg. His speech was stammering. His eyesight had become gradually worse, but he had no difficulty in understanding the written or spoken word.

On examination of the cranium and spine no tenderness was found over the occipital region. Sense of smell was normal. The field of vision was unimpaired. The pupils reacted to light and accommodation. Muscular imbalance of the eyes was present. The seventh and eighth cranial nerves were normal. Hearing was normal. Taste was

normal. The tenth, eleventh and twelfth cranial nerves were normal. Weakness of both arms was present, more particularly the left. There was wasting of both arms. Coordination was impaired (upper and lower limbs). There was no tremor. Slight rigidity of the left arm and left leg was present. Common sensibility was not impaired. Touch and pain sensation was normal. Adiodochokinesis of the left hand was present. The pupillary, palatal, abdominal, plantar, wrist and elbow reflexes were normal. The knee jerks were "++" on both sides. The ankle jerk was present and patellar and ankle clonus were absent.

X ray examination of the skull revealed no abnormality. The Wassermann test yielded no reaction.

Dr. Blackburn, in consultation with the Honorary Ophthalmologist, reported on March 27, 1931, that there was an optic neuritis in each eye associated with retinal hæmorrhages; the discs were not very swollen, not worse than about two diopters. The retinal veins were very full.

Ventriculography on April 7, 1931, revealed that only the right lateral ventricle had filled. It appeared to be very large and showed no posterior horn. Dr. Poate considered that the appearance was very suggestive of cyst formation, and made a diagnosis of probable astrocytoma with cyst formation.

Craniotomy was undertaken with "Avertin" and local anæsthesia on April 28, 1931. A cystic tumour of the right side of the cerebrum, approaching the mid-line and reaching to the surface of the brain, was found. Its approximate depth was 3·75 centimetres (one and a half inches), its antero-posterior measurement was 7·5 centimetres (three inches), its lateral measurement 3·75 centimetres (one and a half inches). About thirty cubic centimetres of cystic yellowish or straw-coloured fluid were removed.

Dr. Poate explained that since operation the general and mental condition had both been good. The left hand was flaccid (splinted), the left leg and the left arm were still weak. The knee jerks were "++" on both sides. The plantar reflex was flexor on both sides. The cystic fluid showed no signs of hydatid or organisms. Attempts at culture were sterile. According to a preliminary report the tumour was a *spongioblastoma multiforme*.

Dr. Poate said that the tumours in his second and third cases both showed cystic degeneration to which tumours of the astrocytoma class were particularly liable. Hæmorrhage into these cysts was prone to occur and had evidently happened in Case II, thus accounting for the rapid development of symptoms in the fortnight prior to admission to hospital. In Case III the cyst had apparently developed in the tumour, which was involving such a large area of brain as to preclude complete removal. In performing ventricular puncture the cyst was tapped and its fluid replaced by air. That this was the case was recognized at the time owing to the difference in colour and density of the fluid as compared with cerebro-spinal fluid.

Epithelioma of the Hand.

DR. ERIC FISHER showed a male patient, aged thirty-nine years, a labourer, who was admitted to hospital on August 21, 1926. He had a small blister on the back of the right hand for five years which kept healing and breaking down, and which had increased rapidly in size in the last year. Examination revealed a hard fixed malignant ulcer five centimetres (two inches) in diameter over the dorsum of the hand.

Two soft glands were palpable in the right axilla. On August 26, 1926, Dr. T. M. Furber excised the second, third and fourth metacarpal bones and corresponding fingers. The pathological report of the growth was squamous epithelioma.

On April 10, 1927, he was readmitted with a small hard mass in the axilla. There was no sign of local recurrence. On April 11, 1927, an extensive removal of axillary fat and glands was carried out by Dr. St. J. Dansey. The pathological examination showed invasion of glands by squamous epithelioma.

He was readmitted on February 6, 1928, with a large mass high in the axilla.

On February 9, 1928, exploration of the axilla by Dr. Fisher revealed a large mass infiltrating the axillary vessels and nerves. It was considered inoperable except by interscapulo-thoracic amputation. This was suggested by him to the patient and the amputation was done on March 22, 1928.

Pathological examination revealed extensive invasion by squamous epithelioma. The patient showed no sign of recurrence and was able to earn a living as a bush worker. He was able to dress himself, saddle and ride his horse, use an axe and do other heavy work. The operation under these conditions was accompanied by surprisingly little shock unlike an amputation through the hip joint, and Dr. Fisher thought that it should be considered more frequently. It was not uncommon to see men condemned to die from inoperable secondary growths in the axilla following epithelioma of the hand.

Perforation of the Œsophagus.

DR. GARNET HALLORAN showed a patient who had suffered from a perforation of the œsophagus. This report will be published in a subsequent issue.

Uretero-Intestinal Implantation.

DR. R. K. LEE BROWN showed a male patient, aged eighteen years, who was suffering from an ectopic bladder and who had been subjected to the operation of right uretero-intestinal implantation. He demonstrated pyelograms taken after the intravenous injection of "Uroselectan" and pointed out that these showed both kidneys to be normal. He then described the operation as follows.

The abdomen was opened by right paramedian lower abdominal incision. The peritoneum was incised over the right ureter in the pelvis. The ureter was cut as low as was convenient, owing to the small size of the pelvis, about 5·0 or 7·5 centimetres (two or three inches) from its termination. The ureter was mobilized for five centimetres with care to retain intact blood supply. The end of the ureter was split and silk attached. A tunnel 3·75 centimetres (one and a half inches) long was made in the appropriate adjacent part of the recto-sigmoid. A sigmoidoscope was introduced up the rectum by an assistant to the level of the lower end of the tunnel. The metal obturator was withdrawn and a rubber ended one substituted. A circular knife was introduced down the tunnel and a circular piece of mucous membrane at the unseen distal limit of the tunnel was punched out. Thus the tunnel opened into the lumen of the bowel. A flexible metal instrument 37·5 centimetres (fifteen inches) long, to one end of which the ureteral silk ligature was attached, was now employed to push the circular knife down the sigmoidoscope, which was held steady whilst the obturator was withdrawn. The sigmoidoscope was then withdrawn and traction was applied to the flexible instrument by an assistant under the instruction of the operator. Thus the metal instrument disappeared into and down the tunnel, into the bowel lumen and out the anus. The silk followed in course and eventually the ureter entered the tunnel. When the ureter had entered the tunnel to a point which had been previously marked by a catgut stitch, traction was stopped and this single catgut stitch in the external layer of the ureter was used to anchor the ureter to the bowel wall at this point. A couple of stitches through bowel, external layers and peritoneum were used to relieve tension. Closure of the abdomen completed the operation. The silk thread was strapped to the skin of the gluteal region.

Splenomegaly.

DR. T. M. GREENAWAY showed a married woman, aged twenty-four years, who gave a history of a dragging pain in the left side for three years, of the skin going somewhat yellow at times and of being somewhat breathless on exertion. Her condition was investigated at another hospital and at this time the blood count was normal and no abnormal condition other than a "proptosed" spleen was discovered; the patient was then advised to wear a belt. Dr. Greenaway pointed out that in the interval the patient had developed a definite secondary anæmia and

leucopenia. Some decrease in the fragility of the red cells was present and the reticulocyte count was 3%. The Van den Bergh test yielded no reaction. By test meal all forms of anæmia associated with achlorhydria were excluded. Dr. Greenaway thought that the patient was probably suffering from splenic anæmia. At the same time an acquired type of acholuric jaundice was suggested by the findings in regard to the fragility of the red cells and the reticulocytes, but not by the absence of reaction to the Van den Bergh test. In either condition the suggested treatment was splenectomy.

Chronic Lymphatic Leuchæmia.

Dr. Greenaway also showed a patient, aged fifty-two years, who was suffering from chronic lymphatic leuchæmia. The main point of interest in the case was the fact that the onset had resembled that of a chronic staphylococcal skin condition. The skin of the hands became "sore" in February, 1931. It resembled an eczematous condition associated with furunculosis. Soon after that the glands began to swell. The Wassermann test was applied and gave no reaction. The red blood cells numbered 2,830,000 per cubic millimetre and the leucocytes 255,600. Of the latter 97% were small lymphocytes. X ray therapy was applied to the enlarged glands and to the spleen, and in both instances a very favourable reaction occurred.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Cronin, Mary Josephine, M.B., B.S., 1927 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Obituary.

CLIVE VALLACK SINGLE.

DR. CLIVE VALLACK SINGLE, whose unexpected death was recently recorded in these pages, was born at Penrith, New South Wales, on September 17, 1888. His father, who was a grazier near Mudgee, had him taught at Mudgee. The outdoor life of his father's station bred in him a love of sport. It thus happened that when he became an undergraduate at the University of Sydney he achieved his "blue" in both cricket and baseball. He graduated Bachelor of Medicine and Master of Surgery in 1913 and became resident medical officer at the Royal Alexandra Hospital for Children. Subsequently he went to Grafton as assistant to Dr. Earle Page.

With the outbreak of war in 1914 Single enlisted for active service with the Royal Army Medical Corps. He served at Gallipoli with a Wiltshire Regiment. In 1916 he was transferred to the Australian Army Medical Corps and was attached to the Light Horse; he served in Sinai, Palestine and Syria. He became Officer Commanding the Fourth Australian Light Horse Field Ambulance, with the rank of Lieutenant-Colonel. He was awarded the Distinguished Service Order and was twice mentioned in dispatches.

After demobilization Single took up practice at Moree, New South Wales, where he became Government Medical Officer. After six years' residence at Moree he did some post-graduate study in the United Kingdom and started practice as a physician at Macquarie Street, Sydney. He was unassuming and shunned the limelight and had a capacity for making and keeping friends. He will be sorely missed by many.

Dr. Robert Fowler writes:

The untimely death of Clive Single has unexpectedly shocked those of his active service comrades who, like myself, are resident in Victoria. We met and served in the Australian Mounted Division and more particularly in the Fourth Light Horse Brigade.

Repeatedly in my post-war association with cavalry camps veterans of the Sinai to Syria campaign, in recounting their exploits, refer with affection and admiration to the part taken by Single. The combatant members never fail to ask for up-to-date news of him from us medical colleagues.

Single was a typical "cornstalk"—tall of stature, of spare build, and with a casual manner. He possessed none of the traditional military stance nor brusqueness; nevertheless he was a virile soldier.

He succeeded me as Officer Commanding the Fourth Light Horse Field Ambulance, so that my personal interest in him was thereafter bound up in the affectionate regard I had for this unit. He saw them through several tight corners, including the retirement from Jisr ed Damieh (in the Jordan Valley) and the clash at Semakh railway station. It was this latter incident that earned him the Distinguished Service Order.

Other military achievements were in connexion with the Wiltshire Regiment, Second Light Horse Regiment, at Anzac and at Suvla, with the Eleventh and Twelfth Light Horse Regiments in Palestine.

Of his well known sportsmanship others are better able to write than I. The first thing I knew about Single was his prowess at cricket, whereas almost the last was his expedition to the Sudan big game hunting.

All ranks of the Desert Mounted Corps will feel the deepest sympathy for the widow of this very gallant gentleman, as she possesses our everlasting gratitude for the work she did for the Corps whilst at Kantara with Dame Alice Chisholm.

Dr. C. Bickerton Blackburn writes:

The utterly unexpected death of Clive Single came as a great shock to a wide circle of friends. "But why Clive?" is a thought that has haunted many since.

My earliest recollection of him dates back to the time he became one of my clinical clerks in his final year. A striking looking lad with a charming smile and a great thirst for knowledge. Another vivid mental picture locates him in an old Arab garden encompassed by prickly pear—not very far from Gaza. His command, the Fourth Light Horse Field Ambulance, was stationed in the little oasis, and he had already become quite famous for his reckless courage and organizing ability, but as I recall him sitting on an empty box, he was just the same unassuming, smiling Clive of student days.

Always quiet and reserved, he had an extraordinary capacity for winning friendship, and he was one of those rare people who probably never had an enemy.

I knew him very intimately and had the warmest admiration and personal regard for him. It was his dream to become a pure physician, and it is particularly sad to think that his tragic death took place just as the dream seemed on the point of coming true.

Dr. R. J. Hunter writes:

May I be allowed to express, in the columns of our journal, my deep regret at the passing of Clive Vallack Single.

I was privileged to enjoy an intimate friendship with him during the later years of the war, and particularly since the war ended. For four year we were associated in partnership in Moree. Clive Single compelled admiration wherever he moved. In professional as in private life, in sport as in work, he was ever the same—loyal and steadfast, generous in thought and action, extremely tolerant, following unswervingly his own simple yet all-sufficient code. I have known no man who approached so nearly the "most gentle, perfect knight," of whom he was so fond of reading. In the Moree district he is remembered with affection by all with whom he came in contact, and the news of his death caused a great wave of sorrow among us.

ARTHUR WILLIAM MARWOOD.

WE regret to announce the death of Dr. Arthur William Marwood, which occurred at Geelong, Victoria, on August 6, 1931.

Correspondence.

FOCAL SEPSIS.

SIR: While I admit there has been a too ruthless extraction of teeth and enucleation of tonsils in pursuit of the criminal bug, I am more than over-impressed with the value of sterilization of tonsil in people of middle age onwards with all kinds of after effects from focal sepsis. I think it is much more efficient than enucleation, possibly because of the overdose they get from the operation. To see a man, anæmic and weary, get rosy and cheerful after two applications of diathermy has to be seen to be believed. To get a patient from lumbago to throw away one stick after one application and the other a fortnight later and be normal in a month after six months' painful locomotion is also most gratifying. I am sure Dr. A. E. Rowden White will allow me to quote him as a witness for the first patient, and Dr. Matters, of Adelaide, for the second. X ray films prevent unnecessary removal of teeth and diathermy avoids a tedious and painful convalescence from tonsillectomy. I have never yet seen a case of "focal sepsis" arising from an infected sinus of the nose.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne,
July 25, 1931.

THE PRIVATE TREATMENT OF MENTAL PATIENTS.

SIR: Will you please let me know through the columns of THE MEDICAL JOURNAL OF AUSTRALIA:

1. What regulations (if any) are in existence to be complied with by medical practitioners wishing to take persons suffering from mental ailments as resident patients in their own homes, or in a small private home with a resident medical officer? I mean a home for the treatment of mental ailments only. What regulations exist in New South Wales and also in Queensland, if any, both for treatment of adults and of mentally deficient children in private homes or private hospitals for such patients only?

2. Where could I procure a copy of *The Mental Treatment Act*, England, 1930, and what is meant by "voluntary," "certificated" and "uncertificated" patients under the English Act?

3. Could you recommend any helpful books for an experienced practitioner's guidance who thinks of starting a private home for mental diseases? Also a good work on mentally deficient children's treatment and training, with the tests employed for separating them into groups fit for educating and those not fit.

Any advice or information you can give will be appreciated.

Yours, etc.,

"MENS."

Queensland,
June 10, 1931.

[1. In New South Wales there are no regulations relating to the care in private homes or the homes of individual medical practitioners of patients suffering from mental ailments. In New South Wales there are no regulations governing the care or control of mental defectives. Those of lower grade, classed as idiots or imbeciles, are provided for only in the *Lunacy Act* of 1898. In Queensland Sections 10 to 21 of *The Insanity Act of* 1884 deal with the licensing of private mental hospitals, but no such licences have been granted in that State, and Section 22 provides that no unlicensed person shall take care of any insane person for profit.

2. *The Mental Treatment Act*, England, 1930, can probably be inspected at the office of the Inspector-General of Mental Hospitals in New South Wales or Queensland. As far as can be ascertained, it will be necessary to write to England for a copy. As far as the meaning of the terms "voluntary," certified and uncertified patients are concerned, a "voluntary" patient is one who submits himself for treatment. Such a patient is uncertified.

3. The most suitable books are: "Mental Deficiency," by A. F. Tredgold; "Textbook of Psychiatry," by Henderson and Gillespie; "Education of Mentally Deficient Children," by Potts and Shuttleworth; "Handbook of Psychotherapy," by Yellowlees.—EDITOR.]

PROFESSIONAL ADVERTISEMENT.

SIR: Dr. Barry in his reply, published on July 25, to my letter of July 15, asks how often (except at the annual elections) we have had a ballot in the last five years. The answer to this is—no ballot has been taken. The Articles of Association do not allow of it. Article 68 (1) states: ". . . . and the By-laws may from time to time be added to, amended, altered or repealed by the Association in General Meeting . . . ." *et cetera*. Moreover, Articles 31-35 dealing with the question of voting, definitely state that voting at a general meeting shall be by a show of hands or by poll if demanded by at least ten members in writing. No mention is made of ballot by post.

It is quite competent for the fifty or more members who have communicated with Dr. Barry by telephone, letter *et cetera* to make an effort to have these articles amended, if they so wish, and thus obtain "equal voting powers for all."

I can assure Dr. Barry that I quite sympathize with the country practitioners who are so far away from the centre of the Branch, but I think it can be stated with confidence that at the annual meeting of delegates of local associations with Council and the quarterly meetings of Council the country practitioners' interests have always had fair and just consideration. No doubt this occurs also at the ordinary meetings of Council or its committees.

May I point out to the members of the Association that the latest amendment to By-law 9*b*, restricting professional advertisements, had its origin at an extraordinary general meeting following the annual general meeting of 1930, when the following motion was proposed, seconded and carried by members.

> That it be a recommendation to the Council that steps be taken to alter the By-laws, with a view to eliminating all advertisements.

Dealing with the question of failure of ballot by post, the method has been tried by a local association to my knowledge more than once with poor results. Failure is not to be gauged by the numerical response alone, but also by the response of members, who are not conversant with the pros and cons of the case. A ballot without previous discussion lends itself to failure every time.

The remarks of Dr. J. R. Ryan on the standing of the local associations are welcome though very debatable. They open up an extensive subject—the constitution of the Council—but it is from such suggestions that advancement takes place.

His suggestion that in the past I have been a rebel, but am now subdued, leaves me quite happy. He is sorry my rebellious spirit has been subdued. I am not, that is, if I ever had one. I would hate to think that after hearing Council's view on any matter on which I had criticized them, my reasoning powers were not elastic enough to see my error. Any other attitude would lead nowhere. Nor must it be thought that I am enamoured of everything Council does, far from it. I always have been, still am, and for ever hope to be, critical of Council and its action, provided that such criticism is fair, reasonable and constructive.

And now for a few words on the unfortunate attitude of some of our members. How nauseating it is to be asked over and over again that question: "What has the British Medical Association done for me?" In other words: "What has the profession as a body done for me?" for the British Medical Association in New South Wales does represent the profession as a whole. It would be much better if some members were to ask themselves: "What have I done for the British Medical Association?" or, more broadly, "What have I done for the profession?'

It has been suggested to me, as the result of my first letter, that a spirit of apathy has developed amongst members, arising from the actions of Council in the past, that Council has not been what it should have been, and that individual members of that body used it for their own personal gains. For this, there is a remedy—the annual elections. Apparently, however, the majority of members, or of those who cared to exercise their vote, have not thought so, for the yearly changes in the personnel have been small. To those who persist in this attitude, I make one appeal. Forget it! The Association belongs to members. The results obtained by it are determined by the attitude of the members themselves.

Yours, etc.,

HUGH HUNTER.

"Westgate,"
Oxford Street,
Waverley.
August 5, 1931.

Diary for the Month.

AUG. 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
AUG. 26.—Victorian Branch, B.M.A.: Council.
AUG. 27.—South Australian Branch, B.M.A.: Branch.
AUG. 27.—New South Wales Branch, B.M.A.: Branch.
AUG. 28.—Queensland Branch, B.M.A.: Council.
SEPT. 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 2.—Victorian Branch, B.M.A.: Branch.
SEPT. 3.—South Australian Branch, B.M.A.: Council.
SEPT. 4.—Queensland Branch, B.M.A.: Branch.
SEPT. 8.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 10.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 15.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments.

Dr. J. E. Overstead has been appointed Medical Officer of Health by the Dowerin Road Board, Western Australia.

* * *

Dr. C. S. Barbour (B.M.A.) has been appointed to act as a Medical Inspector of Seamen pursuant to the provisions of Section 123 of the *Navigation Act* 1912-1926.

* * *

Dr. W. A. Harrison has been appointed a member of the Board of the Spencer Public Hospitals District, Tasmania, pursuant to the provisions of the *Hospitals Act*, 1918.

* * *

Dr. J. Macarthur (B.M.A.) has been appointed Government Medical Officer at Muswellbrook, New South Wales.

* * *

Dr. D. G. MacKellar (B.M.A.) has been appointed Government Medical Officer at Port Kembla, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi.

CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers.

COMMONWEALTH OF AUSTRALIA: Medical Officer.

STATE PUBLIC SERVICE, QUEENSLAND: Medical Officer, Part-Time Medical Officer (female).

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members desiring to accept appointment in ANY COUNTRY HOSPITAL, are advised to submit a copy of their agreement to the Council before signing, in their own interests. Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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